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APPAREL AND OTHER FINISHED PRODUCTS MADE FROM FABRICS AND SIMILAR MATERIALS

French

HUDGIN, DONALD E. and VIVADELLI, HUGO E. Protective clothing, inner boots and rubber gloves, (Rubber impermeable clothing - presumably French). (Chemical Warfare Service. Captured Materiel Technical Report, CMTR 35). Off. Pub. Bd., Report, PB 11314. 1944. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
Heavy protective rubber jackets, and trousers, light inner boots, and heavy rubber gloves were examined and tested. The garments, used to protect the wearer from liquid and vapor when working with vesicants, offer much greater resistance to liquid vesicants than do comparable U.S. equipment. However, the U.S. clothing is much more conducive to efficient working because of its lightness and greater flexibility. Tables and a photograph are included.

RANDA, SHIRLEY W. French heavy rubberized anti-gas suit. (Chemical Warfare Service. Foreign Materiel Technical Report, F.M.T.R. 116). Off. Pub. Bd., Report, PB 7218. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
A two-piece suit consisting of overalls and a jacket with attached hood, was examined. The total weight of the suit, without shoes or gloves, was 8.25 lbs., as compared to 3.6 lbs. for comparable U.S. protective items. The liquid H resistance is fair, but the breaking strength is inadequate. It is recommended that this French suit be used only when comparable U.S. equipment is not available, and only in combination with permeable protective clothing. Table and photographs.

German

HUDGIN, DONALD E. and VIVADELLI, HUGO E. German apron, protective, rubber. (Chemical Warfare Service. Captured Materiel Technical Report, CMTR 62). Off. Pub. Bd., Report, PB 11301. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
The apron is made of black rubber coated fabric and gives protection to persons working with vesicants. Results of vesicant penetration tests are given as well as a full description of the apron and a photograph.

HUDGIN, DONALD E. and VIVADELLI, HUGO E. German horse gaiter 41. (Chemical Warfare Service. Captured Materiel Technical Report, CMTR 48). Off. Pub. Bd., Report, PB 11311. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a description of German horse gaiters used for protection against contamination by vesicant agents. The item is comparable to the American horse leggings, M1, and will protect against mustard for an average of 3 hours, and against lewisite for about 49 minutes. A photograph is appended.

MATTESON, W. J. Comments on German rubberized pants and boots, treated sheets and rubberized gas mask container - Engineer Board Register No. 2046. Off. Pub. Bd., Report, PB 8718. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
General observations made after a cursory examination of the equipment are presented in tabular form in the enclosed Materials Branch Report No. 725-1, "Examination of German Equipment", dated 26 December 1944. Photostatic copy.

RANDA, SHIRLEY W. German heavy rubber mittens. (F.M.T.R. 97.) Off. Pub. Bd., Report, PB 4506. 1944. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
A pair of heavy synthetic rubber mittens was examined and found to provide suitable protection against blister gases. Photograph is included.

SMITH, THOMAS R. The dyeing of hosiery in Germany. (FIAT Final Report 555). Off. Pub. Bd., Report, PB 12184. 1945. 5 p. Price: Microfilm- 50¢ - Photostat-$1.00
Hosiery made of natural silk reinformed with mercerized cotton or stockings made of artificial silk (rayon) and mercerised cotton are dyed in Germany mostly on mechanical dyeing apparatus and only rarely in smaller lots by hand suspending on sticks. Two main types of mechanical dyeing apparatus are being used; apparatus similar to the Smith-Drum rotating drum system, and systems in which the stockings are suspended on sticks by means of threads passed through the heels. The stockings of artificial silk had to be cleaned before the dyeing by means of the usual cleaning agent on the basis of alcohol-sulphonates or fatty acid condensation products in connection with fat solvents.

Japanese

CARTER, ADAMS, Comp. Japanese clothing, equipment and rations and a brief discussion of Japanese supply functions similar to those of the U. S. Quartermaster Corps. Off. Pub. Bd., Report, PB 8245. 1945. 200 p. Price: Microfilm-$2.00 - Photostat-$14.00
This report is an account of Japanese supplies and supply functions which are similar to those for which the United States Army Quartermaster Corps is responsible. Photographs and drawings are used for illustrations. Appendices present translations of Japanese cold weather clothing manual, and of a Japanese manual on the use of tropical clothing and equipment published in December 1941, together with a list of Japanese clothing and equipment compiled from the complete specifications. Issued by Office of the Quartermaster General, Military Planning Division, Research and Development Branch.

MATTESON, W. J. Net, head, camouflage, Japanese. (Army Engineer Corps. Engineer Board Reg. 236). Off. Pub. Bd., Report, PB 9666. 1945.
Description of a Japanese helmet net designed to fit over the standard Japanese helmet in order to provide a means for attaching camouflage material.

Russian

RANDA, SHIRLEY W. Russian heavy weight antigas suit, impermeable. (Chemical Warfare Service, Foreign Materiel Technical Report, F.M.T.R. 118). Off. Pub. Bd., Report, PB 7219. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
A one-piece green heavy rubberized antigas suit, apparently of Russian manufacture, but made for the use of the French, was examined. The total weight of this suit was 8.13 lbs. as compared to 3.6 lbs. for comparable U. S. items, (suit including hood, no gloves or boots). The resistance to liquid H was very poor and the mechanical strength only fair. This suit is not recommended for use by U.S. troops for protection against liquid vesicants. Table and photographs.

United States

GLICKMAN, SHIRLEY M. Impregnation of herringbone twill with dimethyl phthalate and various fixatives. (Chemical Warfare Service. T.D.M.R. 1115). Off. Pub. Bd., Report, PB 7240. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
The object of the work described in this report was to impregnate herringbone twill (Hbt) with dimethyl phthalate (DMP) and various fixatives which might improve the persistance of the dimethyl phthalate. It was concluded that DMP-impregnated cloth is not made resistant to laundering, weathering, tropical conditions, or leaching by water, by any of the fixatives used in the present work. Tables.

GLICKMAN, SHIRLEY M. Storage of dimethyl phthalate and benzyl benzoate impregnated garments in certain individual containers. (Chemical Warfare Service, T.D.M.R. 1117). Off. Pub. Bd., Report, PB 7239. 1946. 16 p. Price: Microfilm-50¢ - Photostat-$2.00
The object of the work described in this report was to evaluate certain materials for suitability in the construction of individual containers for storage of dimethyl phthalate and benzyl benzoate impregnated garments with special emphasis on the following: 1. Prevention or retardation of evaporation of the DMP or BB by the bag during storage; 2. effect on the bag itself. None of the films studied was satisfactory as storage containers for DMP or BB impregnated garments.

LIBET, BENJAMIN and OWEN, BRADFORD B. Conference on protective clothing at National Research Council. (Army Air Forces. Engineering Division, TSEAL-5H-2-120). Off. Pub. Bd., Report, PB 11660. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Proceedings of the conference are described in Appendix 1. Relation of air movement and of air permeability of fabrics to rate of heat loss from the body was reported. It was recommended that hydrophobic silica aerogel, bonded with latex and laminated between textiles, should be utilized by the Flying Clothing Branch. Tables and graphs are included.

SMITH, H.B., Jr. Foam impregnation of clothing. Addendum to T.D.M.R. No. 1063, entitled "Foam Impregnation of Clothing by the Water Suspension Process," J. R. Springer. (Chemical Warfare Service). Off. Pub. Bd., Report, PB 7242. 1946. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
The object of the work described in this report was to establish the fundamental concepts of foam impregnation as currently understood. It was concluded that foam impregnation was a thoroughly feasible process, and it was recommended that an exhaustive specific study be made of the impregnation by the foam process of fabrics with anti-gas agents, insecticides, miticides, insect repellants, water proofing, flame proofing, and mildew proofing agents. A graphical solution of general foam impregnation equations is presented.

ZELEZNY, E.G. Service wear test at Jackson, Michigan, on wire, heating element, for shoe insert, flying, electric, type Q-1, Spec. 3236, Proj. B-66 G. (Army Air Forces. Engineering Division, TSEAL-5H-7-334). Off. Pub. Bd., Report, PB 11657. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report presents results of an actual service test comparing several types of heating element wires, wiring diagrams and fabric constructions in the type Q-1 electrically heated shoe insert. A descriptive table is included.

ZELEZNY, E.G. Wire, heating element, for shoe insert, flying electric, type Q-1, Spec. 3236, service wear test, Columbus, Ohio. (Army Air Forces. Personal Equipment Laboratory, ENG-TSEAL-5H-2-116). Off. Pub. Bd., Report, PB 11661. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
This report presents comparison of results obtained on actual service test of several types of heating element wires designed for use in subject shoe insert. Table, diagram and photographs are given.

CHEMICALS AND ALLIED PRODUCTS

Agricultural Chemicals

BALLS, A.K. "Bacterial fertilizer" for field crops, data from Dr. Otto Siegel. (FIAT Final Report 494). Off. Pub. Bd., Report, PB 11196. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
A practice used increasingly by the Russians since 1932, involving the inoculation of seed with Azotobacter chroococcum, was further developed, with emphasis on selective use of different strains best adapted to individual plant varieties. Of many field experiments carried out in 1944, sixty per cent gave an increase in harvest yield. Reported increases are listed for oats, barley, mustard, cabbage and potatoes. Tables are included.

LA MER, VICTOR R. Efficacy of DDT and DNOC as insecticides for grasshoppers when dispersed by a Hochberg - Laller type aerosol generator. (NDRC Informal Report, 10.2-25, N.R.C. Insect Control, 137). Off. Pub. Bd., Report, PB 6707. 1945. 18 p. Price: Microfilm-50¢ - Photostat-$2.00
Informal progress report of work done by the Central Aerosol Laboratories of Columbia University. It summarizes experiments carried out at Experimental Station, Suffield, Alberta, in which personnel from contract OEMsr 1388 participated and cooperated. The tests were planned to determine the toxic dose of DDT and DNOC (3,5 di-nitro ortho cresol) necessary to kill grasshoppers. The oil solution of DDT Consisted of 85 lb. commerical DDT in 173 lb. Xylene and 600 lbs. Diol 40, with 4½ lbs. Williams Red dye added, making a 10% solution of pure DDT. Results show that steam-generated aerosols of DDT are ineffective as control agents of grasshoppers, even at spot area deposits as high as 5 lbs. per acre. The oil solution of DNOC consisted of 10 lbs. commercial DNOC in 30 lbs. Arosol (1513) and 10 lbs. Diol 40, with 1/4 lb. Williams Red dye added, making a 20% solution of DNOC. Steam-generated aerosols of DNOC are decidedly effective, complete mortality resulting at spot area deposits as low as 0.3 lbs. per acre. Later tests are also described. Report contains photographs of equipment and graphs showing results of experiments.

PARKIN, E. A. and OXLEY, T. A. Research on agricultural matters (M of Ag., M of S (RMD)) (B.I.O.S. Evaluation Report 308). Off. Pub. Bd., Report, PB 9560. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A brief statement of the work of each of the following: Zweigstelle Kiel Der Biologischen Reichsanstalt Lepahn Uber Preetz (near Kiel); Koch and Co., Schifferstrasse 58, Duisberg; Pfanzenschutzamt, Hasselkamp 37, Kronshagen Uber Kiel; Miag, Ernst Amme Str. Brunswick; Zweigstell Gliesmarode Der Biologischen Reichsanstalt. Deals mostly with diseases of cereals and control of pests in stored grain.

Analytical Chemistry

Chinese

LEMLEY, JAMES D. Chinese agent detector kit. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. Foreign Materiel Technical Report, F.M.T.R. MIT 21). Off. Pub. Bd., Report, PB 8038. 1944. 23 p. Price: Microfilm-50¢ - Photostat-$2.00
The Chinese detector kit was composed of a small, unpainted wooden box, on one side of which was pasted a label printed with Chinese markings and a set of numbers. Inside the case were contained: three cloth clips, each holding five sealed glass tubes of liquid reagents; ten paper folders on whose right inside were attached three strips of absorbent paper and on whose left inside were Chinese marking; and the instructions for the use of the kit. Tests are made by impregnating the three papers in one of the folders with the corresponding liquid reagents, exposing to the suspected war gas, and observing for color changes. The Chinese agent detector kit is inferior to the U.S. kit, chemical agent detector, M9, in regard to construction, number of important agents detected and sensitivity of tests. The Chinese kit will detect liquid H, CG, PS and Cl.

German

KEYES, J. The determination of elements by direct electro-photo measuring of their spectral line intensities. Off. Pub. Bd., Report, PB 6798. n.d. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
In this report, work on an applied method for the direct determination of elements in sparks is briefly outlined. Three German companies had jointly designed an instrument on this principle and most of the parts had been produced. References.

ROSE, E., and others. Large German combination sniff set. (F.I.M.T.R., Report 102.) Off. Pub. Bd., Report, PB 4503. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
"The large combination 'sniff set' is not used by the German army for training troops, but is one of the accepted methods used to familiarize the civilian population with the various war gases. This is accomplished by use of the senses of smell and sight, working in combination with each other. The tubes contain the various agents which can be sniffed, but the bottom of each tube contains a simulated agent which can be viewed at the same time, thus fulfilling the purpose for which it is intended." Identification of the sniff agent and of the simulated liquid agent are given. Photographs are included.

SEIDEL, PAUL V. and MANDELBAUM, BERNARD. German chemical agent detector tubes. (Foreign Material Technical Report, MIT 27). Off. Pub. Bd., Report, PB 10399. 1944. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
These tubes, with the pump designed for their use, are for testing contaminated air. A complete description of the use of the kit is given in C.M.T.R. no. M.I.T. 8, "German chemical agent detector kit". Since the first report gives a thorough description of the tubes, including photographs and diagrams, the present report is concerned only with the differences found. Fifty tin boxes of replacement tubes were examined. Results of analyses and a comparison with previous analyses are given in Table I. Analysis of reagents and a photograph of a tube are included. It is recommended that consideration be given to the inclusion of an arsine detector (either $AuCl_3$ or $HgCl_2$) in the chemical agent detector kit, M9; and that a cyanide detector be developed for inclusion in the M9 kit.

Italian

SEIDEL, PAUL V. Italian detector kit for mustard and phosgene. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. Captured Materiel Technical Report, C.M.T.R. MIT 2). Off. Pub. Bd., Report, PB 10426. 1943. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
The kit consists of a metallic case designed to be attached to belt or suspended over the shoulder, and is designed to hold 16 mustard detectors and 12 phosgene detectors. Tests indicate that the kit is effective in detecting H and CG. Photographs are appended.

Japanese

SAUER, CHARLES WILLIAM. Japanese detector papers. (Foreign Material Technical Report, no. MIT 28). Off. Pub. Bd., Report, PB 10400. 1944. 22 p. Price: Microfilm-50¢ - Photostat-$2.00
Samples of two detector papers captured from the Japanese in Burma have been examined in the Chemical Warfare Service Development Laboratory of the Massachusetts Institute of Technology. One paper for the detection of arsenicals was found to contain mercuric chloride. The second paper is coated with cuprous iodide, containing a little cupric sulfate and gives a test for mercuric chloride in water. No information is available as to the use of these detector papers by the Japanese. However, several possible uses for these papers exist, (a) as water testing papers, (b) as field detectors for arsine and haloarsines, and (c) as laboratory test papers. It is recommended that serious consideration be given to the possibility of mercuric chloride being used as a water contaminant by the Japanese. Report contains photographs, and tabulated test results.

SEYDEL, PAUL and CHAO, YUE TSUNG. Japanese carbon monoxide detector set. (Foreign Materiel Technical Report, MIT 29). Off. Pub. Bd., Report, PB 10401. 1944. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
A captured Japanese carbon monoxide detector kit including carrying case, pump, instructions, comparator kit, etc. has been examined in the Chemical Warfare Service Development Laboratory of the Massachusetts Institute of Technology. The indicator reagent consists of a mixture of iodine pentoxide, fuming sulfuric acid and light "broken stone" granules. It will react and give a color change with CO in air. Since no detector tubes were present, its efficacy could not be determined. It is large, heavy, and evidently not designed for field use. Photographs and a schematic diagram are included.

United States

DANNER, C.E. and GOLDENSON, JEROME. Special methods for analysis of incendiary mixtures. (Chemical Warfare Service. CWS Field Lab. Memo. 1-2-1). Off. Pub. Bd., Report, PB 11563. 1942. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
This report presents analysis procedures for plain thermite; for Flare Mixture containing $Ba(NO_3)_2$, Al, S, and castor oil; for Therm-8 consisting of 80% thermite and 20% flare mixture; for Fire Mixture, consisting of 80% flare and 20% black powder; Starter Mixture, consisting of 40% silicon, 40% KNO_3 and 20% sulphurless meal, unknown mixtures, and for the determination of phosphorus in incendiary oil.

GEHAUF, BERNARD. Identification of chemical warfare agents by color test methods. (Chemical Warfare Service. CWS Field Lab. Memo. 1-2-8). Off. Pub. Bd., Report, PB 11568. 1943. 43 p. Price: Microfilm-50¢ - Photostat-$3.00
This paper describes three types of color tests recommended for field laboratory identification of chemical warfare agents, the silica gel detector tube, the indicator paper and the liquid contact detector tests. Methods of their application and suitability for the detection of most common chemical warfare agents are given. Drawings are included.

LEITCH, JAMES L. and FELL, RICHARD R. Supplementary data on the chlorine demand test reported in MD (EA) Memorandum Report 49 (PB 13659). (Chemical Warfare Service. Medical Division. MD(EA) Memorandum Report 67). Off. Pub. Bd., Report, PB 11192. 1942. 19 p. Price: Microfilm-50¢ - Photostat-$2.00
A comparison was made between the use of (a) the standard ortho-tolidine solution (b) ortho-tolidine test strips of paper or glass cloth and (c) ortho-tolidine tablets for the determination of residual chlorine in water. The standard bleach solution as used in the chlorine demand test has been shown to be stable for three months. An individual field kit has proven satisfactory in laboratory tests. Tables are included.

LIVINGSTON, R.S. "A direct specific detector for arsenical vapors," progress report to May 8, 1943. (OSRD Report 1401). Off. Pub. Bd., Report, PB 6539. 1943. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
The zinc-molybdate detector tube for arsenical vapors has been studied in detail in regard to conditions for the preparation of the gel, the sensitivity of the tests obtained, and the stability of the resulting detectors. Specifications are recommended for the preparation of this type of tube. This is a progress report under contract with the University of Chicago.

OSRD 3693

LIVINGTON, R.S., SWEC, LEONARD, and WILZBACH, KENNETH. Detection and identification of iron pentacarbonyl with Geissler tubes. (Chemical Warfare Source. CWS Field Lab. Memo. 1-2-10). Off. Pub. Bd., Report, PB 11569. 1943. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
This report covers three independent tests developed for the detection and identification of iron pentacarbonyl. The gold chloride, the zinc molybdate and the alpha-alpha'-dipyridyl tests, the methods of their application and their sensitivity are described. This report is an informal report (No. 66) on work done under NDRC contract at the University of Chicago.

MCLACHLAN, ROBERT W. Ethylene glycol coolant. (Army Air Forces. Engineering Division, ENG-M-57-523-195). Off. Pub. Bd., Report, PB 6210. 1942. 4 p.
Price: Microfilm-50¢ - Photostat-$1.00
The pH and titration values of seventeen samples of used ethylene glycol were determined at prevailing room temperature. Data are given in two tables.

MCLACHLAN, R.W. Ethylene glycol coolant; analysis of service samples. (Army Air Forces. Engineering Division, ENG-M-57-523-194). Off. Pub. Bd., Report, PB 6208. 1943. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
Fifty-three service samples of used ethylene glycol were analyzed and the results given in tables and graphs. Variables studied were phosphate content, pH value and quality of ash. Spectrographic analyses indicated the presence of appreciable quantities of copper and comparatively small quantities of aluminum in the samples analyzed.

MASON, C. W. Microscopical identification of explosives. (CWS Field Lab. Memo. 1-3-6. OSRD Report 3658). Off. Pub. Bd., Report, PB 11586. 1944. 37 p. Price: Microfilm-50¢ - Photostat-$3.00
This report classifies the more common ingredients of explosives and describes methods for their microscopic identification. Representative compositions are listed in this report for mixed explosives. Much of the material included is based on Progress Reports of Division 8-2, NDRC by A.T. Blomquist, in which more comprehensive and detailed discussions of crystallography, behavior, and techniques are presented, for a greater variety of substances.

MASON, C. W., and DELAMATER, C. B. The microscopical identification of derivatives of certain chemical warfare agents. (OSRD Report, 4678.) Off. Pub. Bd., Report, PB 4459. 1945. 22 p. Price: Microfilm-50¢ - Photostat-$2.00
This report gives directions for preparation and microscopical identification, including diagrams of crystal structure, of various ketonic chemical warfare agents. The derivatives given are the 2,4 dinitrophenylhydrazones of sym-dichloromethyl ether, sym-dibromomethyl ether, chloroacetone, bromoacetone, 3 bromobutanone-2, sym-dichloroacetone, ω-chloroacetophenone, ω-bromoacetophenone and o-chlorophenacyl chloride. Thiourea and picrylsulfonic acid derivatives of the above ketonic substances are also given.

RUSH, CECIL A. Methods of analysis and identification of chemical agents. Special methods of gas analysis. (Chemical Warfare Service. CWS Field Lab. Memo. 1-3-7). Off. Pub. Bd., Report, PB 11567. 1942. 29 p.
Price: Microfilm-50¢ - Photostat-$2.00
This report covers procedure, data, conclusions and recommendations in respect to special methods of gas analysis required and employed for the atmosphere in tanks during gun fire. It also discusses methods in determining compositions of HC smoke, ethylene as produced from alcohol for HS plants, smoke from oil fired smoke pots, HS vapors in air, gases from the production of lewisite, and impurities in phosgene as stored. Drawings of apparatus.

SWIFT, E.H. and NIEMAN, CARL. A system for the ultimate analysis of chemical warfare agents. Parts I, II, III, IV. (Chemical Warfare Service. Field Lab. Memo. 1-3-4). Off. Pub. Bd., Report, PB 11566. 1944. 229 p.
Price: Microfilm-$2.50 - Photostat-$16.00
This document is a manual containing full instructions on the ultimate analysis - both qualitative and quantitative - of chemical warfare agents. All steps, from the preparation of samples to the final determination of composition, and apparatus to be used are described in detail. Report was prepared at the California Institute of Technology.

TARBELL, D. S. and others. A systematic scheme for the detection of toxics on plain silica tubes. (Chemical Warfare Service. CWS. Field Lab. Memo. 1-2-2, Revision 2A). (OSRD Report 4629). Off. Pub. Bd., Report, PB 11564. 1945. 31 p. Price: Microfilm-50¢ - Photostat-$3.00
This report describes the methods of detection of about 32 toxics, both persistent and non-persistent, on plain silica tubes. Also a simplified scheme for the detection and partial identification of toxics, which requires fewer reagents and tubes has been worked out and presented in this report.

U. S. CHEMICAL WARFARE SERVICE. Methods for determining index of refraction. (CWS Field Lab. Memo. 1-3-1). Off. Pub. Bd., Report, PB 11584. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report contains general instructions and directives for the determination of index of refraction and references to literature on this subject.

U. S. WAR DEPARTMENT CHEMICAL WARFARE SERVICE. Laboratory School. Part I. The determination of carbon and hydrogen. Part II. A carbon dioxide expansion cooler. (CWS Field Lab. Memo. 1-2-19). Off. Pub. Bd., Report, PB 11571. 1944. 24 p. Price: Microfilm-50¢ - Photostat-$2.00
In Part I, a weighed sample is combusted in a stream of oxygen. By successive passage of the effluent gases through absorption tubes, water and carbon dioxide are quantitatively determined by the increase in weight of the respective absorption tubes. Complete oxidation of the sample is ensured by passing the gases over platinum and copper oxide at elevated temperature. The carbon dioxide expansion cooler described in Part II was developed to satisfy the need for a highly efficient cooling device to replace the relatively wasteful dry-ice cooling baths which have been used, in conjunction with a vacuum system, in the sealing of small quantities of volatile toxics in glass ampoules. Diagrams are given.

WALTERS, S.L. and MILLER, R.R. Naval Research Laboratory. Analysis of BF_3 in organic liquids. Off. Pub. Bd., Report, PB 11351. n.d. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report outlines reasons of difficulties encountered in the analysis of boron trifluoride in organic liquids and describes a method in which the compound is changed into the stable form of sodium fluoborate for the purpose of its quantitative analysis.

YOE, JOHN H., and others. Determination of fluorine in fluoro-organic compounds in low concentrations in air. Supplement. (OSRD Report 3830a). Off. Pub. Bd., Report, PB 6021. 1944. 2 p. Price: Microfilm-50¢ Photostat-$1.00
Report of experimentation at the University of Virginia to June 6, 1944. These two pages supplement OSRD Report 3830 (PB 6020). They consist of a flow sheet, and a photograph of CWS Scrubber. PB 6020 is reported on p. 533.

Detergents

BROWN, STANLEY and TRAILL, DAVID. Cellulose ethers at Biebrich, Wiesbaden. (FIAT Final Report 321). Off. Pub. Bd., Report, PB 8007. 1945. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
This factory manufactures cellulose ethers which are soluble in water and also one soluble in alkali. A very small quantity of a methyl cellulose soluble both in water and in a methylene-chloride-methanol mixture is also made. The ether made on the largest scale is Tylose HBR, a crude cellulose glycollic acid, which is employed as a washing agent to aid detergents. The Tylose HBR collects the colloidal dirt removed from the fabric and prevents its resettling on the fabric. In this way brighter fabrics are produced and the quantity of soap necessary is halved. The water soluble ethers are used as emulsifying agents and adhesives. Diagrams and a table are included.

STEINLE, J. VERNON. Economic study of German synthetic waxes. Off. Pub. Bd., Report, PB 11173. 1945. 36 p. Price: Microfilm-50¢ - Photostat-$3.00
This report describes, in detail, the German production and refinement of Montan wax from brown coal. Production was by Rebeck'sche Montan Werke (now in Russian zone) and I.G. Farben A.G. The former concern produced all the crude Montan Wax made in Germany using brown cool containing 10 - 15% (and up to 18%) of Montan wax. This report is based on information obtained from Dr. Walter Raeche, a former director of Rebeck'sche Montan Werke, and complete working directions of the processes at I.G. Farben A.G., given in German in two appendices. I.G. Montan waxes produced are mentioned and characterized. These include I.G. Wax "S, L, G, E, O, OP, CR, BJ (bleached and unbleached), N, W, AD, special, KP, KPS, Z, V (polymerized vinyl ether of octyl decyl alcohol)" and "Emulgier Wax PS". Plants are said to be intact. Capacity, personnel requirements, products on hand and equipment are listed

Dyes

JACKSON, J. H. Dye and packet, fluorescein, for life vests. (Army Air Forces. Engineering Division. ENG-M-54-671-125). Off. Pub. Bd., Report, PB 11694. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This item consists of a small waterproof packet of fluorescein dye which is cemented between the two inflatable tubes on the left side of the life vest. This dye, packed on the inside of the packet in a porous paper container that will permit it to dissolve in a short time, can be seen from approximately five miles at 10,000 feet on a clear day.

Inorganic Chemicals

DAVIES, RICHARD L. Chlorine dioxide and sodium chlorite at I.G. Farben plant at Griesheim, Germany. Off. Pub. Bd., Report, PB 11199. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Information on the process and equipment at this plant was obtained by inspection of plant and by interrogation of Dr. Kauffmann, Director of Inorganic Operations, I. G. Farben. The process for making sodium chlorite and chlorine dioxide had been worked out in pilot plant equipment with capacity of 15 tons per month. A small commercial plant with a capacity of 100 tons per month had been designed. Eight photographs of equipment are included in this report which however, does not contain engineering drawings of 100 ton plant referred to in text. Chemical formulae for processes involved are also given.

DAVIES, RICHARD L. Hydrofluoric acid and fluorides at Saline Ludwigshalle A.G. at Bad Wimpfen a Neckar near Heilbronn, Germany. Off. Pub. Bd., Report, PB 11200. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
The material for this report was secured by interviews with employees of the company which produced 50% hydrofluoric acid, sodium fluoride, sodium aluminum fluoride and aluminum fluoride. It covers the chemical description of the processes employed, production for each year of the war information on raw materials, and other pertinent data. Photographs and flow sheet drawings are included.

DU PONT DE NEMOURS, E.I., & COMPANY. Production of sulfur monochloride and thionyl chloride without the use of elemental chlorine. (OSRD Report 1261). Off. Pub. Bd., Report, PB 6581. 1943. 30 p. Price: Microfilm-50¢ - Photostat-$2.00
Final report of work done to December 1, 1942 by the Grasselli Department of E.I. du Pont. The object of this investigation was to explore the possibility of producing thionyl chloride and sulfur monochloride starting with chlorosulfonic acid. This acid which is a standard commercial commodity and is prepared from sulfur trioxide and HCl was successfully decomposed by a batch process to sulfuryl chloride with a yield of more than 90% of theoretical and a conversion of 65%. Attempts to reduce the sulfuryl chloride directly to thionyl chloride were unsuccessful. Reduction with sulfur yielded sulfur monochloride or dichloride, depending upon the reaction conditions. A 65% yield of thionyl chloride was obtained by reacting the crude product obtained from sulfur and sulfuryl chloride with a further equivalent of chlorosulfonic acid, but raw material cost figures indicate that this route to thionyl chloride would not be attractive in competition with synthesis based upon elemental chlorine. Likewise, cost estimates indicate that this route to sulfur monochloride will not compete with syntheses based upon elemental chlorine. Report contains flowsheets of sulfur monochloride manufacture, estimates of production cost, and an extensive bibliography, including a description of patents.

FOGLER, M. F. General information on concentrated H_2O_2 T-Stoff obtained at Electrochemische Werk - Hollriegelkreuth (T-Stoff & Z-Stoff). (U.S. Army. Intelligence Division Report 3922). Off. Pub. Bd., Report, PB 9698. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Information in this report of the ALSOS Mission was obtained by interviewing personnel on May 18, 1945. In July, 1944 the manufacturing equipment for 35% H_2O_2 was destroyed by bombing, but the plant for concentration of the 35% H_2O_2 to 80-85% H_2O_2 remained intact. Report includes figures on the overall T-Stoff situation in Germany, a discussion of research and development work being done on production of H_2O_2, chemical composition and physico-chemical properties of T-Stoff and a list of products manufactured at Electrochemische Werk: H_2O_2(35%); H_2O_2(80-85%); $K_2S_2O_8$; $(NH_4)_2S_2O_8$; $CO(NH_2)_2.H_2O_2$; $Na_2CO_3.H_2O_2$ (washing compounds); and Z-Stoff: $NaMnO_4$ and $Ca(MnO_4)_2$. The T-Stoff program made the whole German rocket, assisted take-off and jet propelled program possible.

KLOPFER. Silicic anhydride, K.3., its production and use. (BIOS C.P.V.A. Report 3). Off. Pub. Bd., Report, PB 12665. 1946. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This translation of a German document by Dr. Klopfer, Degussa, Frankfurt-Main discusses the devices used in making K3, and the uses of K3 as an active filling material in making rubber and as a thickening material for all kinds of liquids. K3 is made from $SiCl_4$ which after being converted into vapour is decomposed by steam. The basic equation reads: $SiCl_4 + 2H_2O = SiO_2 + 4HCl$.

MARQUAND, C.B., and others. Additional investigations concerning the stability of solutions of hydrogen peroxide. (Chemical Warfare Service. Medical Division. MD (EA) Memorandum Report, 56). Off. Pub. Bd., Report, PB 11188. 1942. 15 p. Price: Microfilm-50¢ - Photostat-$2.00
Tests used were continuous boiling, storage in the constant temperature oven at 50 C., and storage at room temperature. It was shown that solutions containing 8 per cent or more of hydrogen peroxide could be stabilized when stored under conditions simulating tropical temperatures for at least six months. Specifications are appended and a bibliography and tables are included.

MARQUAND, C. B. and others. Stabilities of some solid peroxides and oxidizing agents. (Chemical Warfare Service. MD-EA- Memorandum Report 94). Off. Pub. Bd., Report, PB 11389. 1943. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
This report covers investigation which led to the discovery of five solid oxidizing agents stable enough to be recommended for study as to their therapeutic value in treating lewisite contaminated skin of men and animals. These combinations were: Kharasch's mixture - sodium perborate monohydrate plus dihydrogen phosphate; sodium pyrophosphate peroxide (M.D.R.L.) plus calcium chloride; sodium pyrophosphate peroxide (B.E.C. Co.); sodium perborate monohydrate (Du Pont), sodium perborate peroxide (M.D.R.L.)

U. S. CHEMICAL WARFARE SERVICE. Chemische Fabrik v. Transehe K.G. - Gerstofen. Production of hydrazine hydrate. (U. S. Army Intelligence Division Report 3849). Off. Pub. Bd., Report, PB 9694. 1945. 9 p. Price: Microfilm - 50¢ - Photostat - $1.00
Report of interrogation of personnel. In March 1943, the Chemische Fabrik Gersthofen started construction of a plant consisting of three units each rated at 100 tons hydrazine hydrate production per month. This presumably is the largest plant of this type in the world, and manufactured a most important constituent of rocket fuels. Production of hydrazine hydrate solution varying in strength from 80 to 100%, called B-Staff, was started in October 1944, while in the summer of 1944 Chemische Fabrik made the first C-Staff to tentative specification (hydrazine hydrate 30%; methyl alcohol- 56%; water - 14%). At the end of the war the German capacity for hydrazine hydrate was about 160 tons per month, 80 tons at Chemische Fabrik Gersthofen. At the instructions of the Führer the Gerstofen plant and the K.W.M. entered into negotiations with the Japanese for purchase by the Japanese of their processes for T-Stoff, B-Stoff, and Z-Stoff (Z-Stoff is calcium or sodium permanganate), the final contract being settled in June or July, 1944. The process described for the Japanese did not include the high pressure method whereby ammonia and NaOCl was reacted under 30 to 40 atmospheres pressure. Report contains inventories and a discussion of the cost of production, and plant facilities at Gersthofen, as well as a description of the process, essentially the same as that described for Leverkusen in Intelligence Division Report 3721, 30 April, 1945. The production of hydrazine hydrate is carried out in Gersthofen by partial oxidation of NH_3 with NaOCl, with the following chemical reactions: (a) $NH_3 + NaOCl = NH_2Cl + NaOH$; (b) $NH_2Cl + NH_3 = N_2H_4 + HCl$; (c) $2NH_2Cl + N_2H_4 = N_2 + 2NH_4Cl$. A flow sheet of the process is included.

U.S. CHEMICAL WARFARE SERVICE. INDUSTRIAL INTELLIGENCE STAFF. Report on Japanese industrial mercury type electrolytic chlorine cell. Off. Pub. Bd., Report, PB 12372. 1946. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
The trend in Japanese industry since 1931 has been towards mercury type electrolytic cells, as the Japanese were primarily interested in caustic soda of great purity rather than in chlorine. Of the 15 Japanese plants producing caustic soda and chlorine by this process six were found using Krebs type cells and nine a Japanese designed cell, called the Osaka Soda type cell. Of the six Krebs type cell users three had a modified cell, called the "Showa". Construction and performance of the two basic types of cells were found to be similar. Remarkable was the very low current efficiency, low voltage efficiency, and the resulting low power efficiency which, however, was compensated economically by the extreme cheapness of the electric energy, namely 1.5 to 2 mils per KWH. The report gives a description of the cells, a summary of output and performance, and data about the Japanese industrial plants covered. Attached are drawings of plants using two types of cells and a flow diagram of one using the Osaka type used for the production of caustic soda and chlorine.

Paints, Varnishes and Lacquers

BARNETT, OLIVER W. Hot oil resistant lacquer. (Army Air Forces. Engineering Division. TSEAL-4-M4737). Off. Pub. Bd., Report, PB 10110. 1944. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
Samples of coating materials were tested to obtain data necessary for preparing a specification pertaining to a suitable corrosion-hot oil resistant thermosetting finish for steel engines. Detailed results of tests are presented in tabular form and indicate that the method most suitable for cleaning steel specimens is a hot alkali dip followed by a thorough water rinse. The steel specimens should then be dipped in a 0.5% aqueous solution of potassium dichromate to counteract any corrosive action of the alkali.

FARR, HENRY C. Glossary of some German names for chemical products used in the paint, varnish and lacquer industry. Off. Pub. Bd., Report, PB 11202. 1946. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
Much of the information contained in this list of trade names and special terms is presented for the first time. Reference is made to several other reports in which additional details, including methods of preparation, of many of the synthetic resins listed may be found.

GUERNSEY, EDWIN O. Vitreous enamel for bonding and protective coating on aluminum. (Army Air Forces. Engineering Division, ENG-57-523-180). Off. Pub. Bd., Report, PB 6207. 1943. 3 p. Price: Microfilm-50¢ Photostat-$1.00
Attempts to form bonds from samples of vitreous and aluminum enamels were unsuccessful and the protective coating flaked badly when the coated specimens were flexed. Satisfactory salt spray resistance was exhibited. Spectrographic analysis and values of tensile strength are tabulated.

JUKKOLA, E. E. Non-sparking properties of paint coatings. (Army Air Forces. Experimental Engineering Section, EXP-M-56-3880, Add. VI.). Off. Pub. Bd., Report, PB 10096. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of firing tests on test specimens prepared from wing sections of a JU-88 airplane. The thickness of the metal skin was approximately .052 inches and the film thickness of both the exterior and interior paint finishes was about .004 inches. The tests indicate that the finish on the JU-88 airplane has good non-sparking properties, probably because of the excessive thickness of the film. However, even these extremely heavy coatings do not prevent ignitions where the projectile must pass through a greater thickness of metal as indicated by the 100 per cent ignitions when the projectiles penetrated the skin plus hot sections.

MATTESON, W. J. Comments on German camouflage paint. (Army Engineer Corps. Engineer Board Register 2101, 2112). Off. Pub. Bd., Report, PB 11469. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This sample of German camouflage paint is a heavy consistency paste paint that dries dust-free in 5 minutes and dry- to handle in 30 min. The paint can be easily applied with a gasoline-soaked brush, but not a water-soaked brush. Further tests are recommended. A translation of the directions for using this paint is appended.

TERES, JULIUS. Container coatings. (Army Air Forces. Experimental Engineering Section. EXP-M-56-4146). Off. Pub. Bd., Report, PB 9807. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Brief report on a conference on can coatings and finishing, held at Material Laboratory, AAF Materiel Center, Wright Field, Dayton, Ohio, October 5, 1942. 7½ gallon containers requiring interior linings were used for shipment of aviation gasoline and oil and 5 and 55 gallon containers for chlorinated hydrocarbons, gasoline, alcohol, acetone, and other material. It was decided that a 2 coat inner lining would be more satisfactory, probably of the pigmented type to afford greater flexibility and that wherever the metallic coating discussed was suitable, it would be permitted as an alternate. Seam sealing compounds were discussed. Formula for an olive-drab semi-gloss exterior enamel which was satisfactory is given.

TERES, J. Prepaint treatments for aluminum alloys. (Army Air Forces. Experimental Engineering Section. EXP-M-56-4806). Off. Pub. Bd., Report, PB 9782. 1942. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a report on results of tidewater exposure tests of paint films on aluminum alloys 24S-T and Alclad 24S-T, given various pretreatments before painting. Photographs are included.

U. S. NAVY DEPARTMENT. NAVAL RESEARCH LABORATORY. Captured enemy equipment - Request of examination of samples of Japanese paint. Off. Pub. Bd., Report, PB 12620. 1944. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
A critical examination of three samples of paint captured from the Japanese for ingredients, physical properties, and comparison with Navy standard paints. A table summarizes the analysis. Photographs.

WITH, A.J. and TURKINGTON, V.H. Protective coatings for naval aircraft. (OSRD, Report 368). Off. Pub. Bd., Report, PB 12148. 1942. 48 p. Price: Microfilm-50¢ - Photostat-$4.00
This report gives data and results of tests to perfect a coating for aircraft hulls and pontoons so as to minimize the effect of salt water corrosion and fouling of the metal due to marine organisms. The chemical behavior of toxic copper and mercury compounds in relation to their immediate environment was studied in connection with fouling tests. Such poisons were mixed with the paint and gradually released as an acid to prevent growth of marine life on the metal surfaces. The various tests made and the types of paint used are described as to application and effect on corrosion and fouling. Four photographs.

WITH, A.J., and TURKINGTON, V.H. Protective coatings for ship bottoms and naval aircraft. (CSRD Report 413). Off. Pub. Bd., Report, PB 12149. 1942. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
This report summarizes the results of a series of panel tests at Miami, the results further emphasizing the effectiveness of an adherent gray-green deposit of basic copper salts on the coating surface in preventing fouling. 80 panels coated with a number of compositions were submerged in barnacle infested waters for two months. Information on the condition of each panel is presented in tabular form. Project made under contract with Bakelite Corporation.

Plastics and Plasticizers

German

CURTIS, FRANCIS J. Dr. Alexander Wacker für Electrochemische Industrie. Plastics production. (U.S. Army. Intelligence Division Report 3873). Off. Pub. Bd., Report, PB 9699. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
ALSOS mission report on a visit to this plant at Burghausen, Germany on May 21-22, 1945 to investigate the production of plastics. Processes are given for some of the products of this plant, namely: Vinyl acetate monomer; polyvinyl acetate "Vinnapas" (PVAc); polyvinyl alcohol (PVA); polyvinyl acetals (acetaldehyde acetal; polyvinyl butyral); polyvinyl chloride-acetate.

DEBELL, JOHN, GLOOR, WALTER E. and GOGGIN, WILLIAM C. Military Planning Division, Office of the Quartermaster General. German plastics practices. A GMC Overseas Investigation Team Report. Off. Pub. Bd., Report, PB 12467. 1945. 374 p. Price: Microfilm-$4.00 - Photostat-$25.00
This account of German plastics practices consists of 39 separate reports (several in more than one part), called "Appendices", each of which presents the information obtained during an investigation of a firm or the interrogation of individuals. Many photographs of equipment and products are included. Among the plants reported are the various I.G. Farben plants; Rhodiaseta A.G. (wood pulp acetate rayon); Max Baermann (magnetic devices using magnetic alloy as filler and phenolic resin binder); Wiederhold (paint and lacquer); Dynamit A.G. (PVC sheet, phenolics and styrene); Degussa (silica for rubber reinforcement); Spohn and Knoll (shoe sole stock from vinyl chloride; flexible textile coatings based on vinyl chloride and Oppanol); Chemische Werke Albert (phenolic and alkyd base resins for protective coats); Norddeutsche See-Kabelwerke (submarine cables, Styroflex foil and filaments and related products); Kunstoffwerke (molders); Ri Ri Werke (plastic and metal slide fasteners); Continental Gummi-werke (rubber goods); Hackethal Draht-und Kabel Werke (plastic covered wire); Gunther-Wagner (coated paper & metal cans and containers); Eckert and Ziegler (injection molding machines); Rheinische Spritzguss Werk (injection molding); (includes a report on the injection molding industry, giving number of machines in use, makers, number of employees, etc.); Rohm and Haas GmbH. (Acrylate polymers); Fabrik Aschau (cellulose nitration); Dr. Alexander Wacker Gesellschaft f. Elektrochemische Industrie GmbH (vinyl chloride - acetate, and polymers, polyvinyl alcohol, cellulose acetate, shellac substitute); several shoe manufacturers; Martini Werke (impregnated cloth); Hutchinson Gumni-werke (impregnated cloth, sheeting, etc.); Süddeutsche Kabel Werke (wire and cable). Several men - Schieber, Jordan, Reppe and Kroeper, formerly with I.G., were interrogated also, and facts obtained are reported here. Manufacturing details, production figures, etc. are presented. There is an index list of over 200 German plastic trade names and related terms. The report will be available in book form shortly after April 15. Advance orders at the pre-publication price of $4.50 per copy are being solicited by DeBell and Richardson P.O. Box 240, Springfield, Mass.

EVANS, D. C. and HAUGHT, J.W. Prof. Hermann Staudinger, Director of Chemical Institute, University of Freiburg. (CIOS Evaluation Report 387). Off. Pub. Bd., Report, PB 12650. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Prof. Hermann Staudinger, the well known authority on high polymer chemistry, was interviewed. The work done by him during the war on the structure of vinyl polymers is of theqretical interest only. One of his students worked on the preparation and structure of nylons. They have evidence for a branched chain structure of the polyesteramides and have developed viscosity and group determination methods for estimating the molecular weight of nylons. The branched nylons have much greater physical strength than the chain nylons. No knowledge of a secret synthetic fiber was evidenced.

HAUGHT, J. W. Dynamit A.G. vormals Alfred Nobel & Co., Troisdorf near Köln. (U.S. Army. Intelligence Division Report, 3937). Off. Pub. Bd., Report, PB 9697. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
The plastics plant of the D.A.G. was visited June 3-4, 1945 to obtain technical information on the products manufactured during the war and to get information on all new products

and processes. Thermoplastic resins were not made at Troisdorf but were purchased and were converted to molding powders, sheets and extruded or molded products. Thermosetting resins were made using raw materials (phenols, melamine, formaldehyde, etc.) purchased from other concerns. There are between 125 and 150 buildings, some intact and others damaged beyond repair. The important new developments in plastics are: (1) The extensive use of unplasticized polyvinyl chloride including stabilization of the polymer with vinyl indol and the production of stretched film; (2) the use of copolymers of vinyl chloride and maleic esters for producing rigid sheeting; (3) production of leather substitutes from the polyurethenes. Products of the plant are listed, with their trade names, process for production or formula, and amount of production. The products are: (a) Cellulose acetate: (1) "Trolit" molding powder and (2) "Cellon" sheeting; (b) polyvinyl chloride, unplasticized - "Mipolam"; (c) plasticized polyvinyl chloride - "Mipolam"; (d) after chlorinated polyvinyl chloride - "Igelit PC"; (e) Vinyl chloride copolymers - "Astralon"; (f) polyvinylcarbazole - "Luvican"; (g) polyisobutylene - "Dynagen"; (h) polystyrene - "Trolitul"; (i) polyamides, polyestersmides and polyurethanes - Igamides A,B and 6A; (j) vulcan fiber and formed articles - "Vulkanfiber"; (k) phenol formaldehyde resins - "Trolitan" and "Trolitax"; (l) urea formaldehyde resins - "Pollapas"; (m) melamine formaldehyde resins - "Melaminharze"; and (n) polyethylene - "Lupolen".

TRAILL, DAVID. Cellulose esters and mixed esters at Dormagen. (FIAT Final Report 172). Off. Pub. Bd., Report, PB 7999. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Cellulose acetobutyrate has been made at Dormagen at the rate of 120 to 150 tons per year. Cellulose tripropionate and cellulose triacetate have been made on smaller scale. The principal outlet for these materials was in electrical insulation. They are used in the preparation of films, fibers and lacquers. The acetobutyrate is flexible in character and unplasticized films can be used. Cellulose filament were triacetylated in cake form successfully.

TRAILL, DAVID Cellulose ethers, Elberfeld. (FIAT Final Report 171). Off. Pub. Bd., Report, PB 7998. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
The I.G. factory at Elberfeld is engaged principally (80%) in the manufacture of pharmaceuticals, but also manufactures rubber chemicals, plasticizers for lacquers and cellulose ethers. The latter are carboxymethyl cellulose (cellapret), benzyl cellulose and ethyl cellulose. Procedures are given for the small-scale manufacture of these ethers.

WARDENBURG, F.A.C. Dr. Kurt Herberts & Company. (U.S. Army. Intelligence Division Report, 3551). Off. Pub. Bd., Report, PB 9634. 1945. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Also: Mission (U.S. Army) note on a Paris research laboratory of Dr. Kurt Herberts & Company. This laboratory was staffed by French chemists with a German representative coordinating the work with the requirements of the parent company. Research was done on the synthesis of materials which could be polymerized, particularly atropic acids and their esters. Later the field was enlarged to include the synthesis of easily saponificable phenyl and acrylo nitriles. The most interesting individual compounds upon which work was done appear to be p-methoxy acetophenone, methyl and ethyl esters of atropic acid and atropic acid plus negative substitutes. A file of research reports, patent applications etc., secured from this firm is available at the Supreme Headquarters, A.E.F. Document Section.

United States

BROWN, A. E. The problem of fungal growth of synthetic resins, plastics and plasticizers October 1945. (Tropical Deterioration Administrative Committee Report 23. (OSRD Report 6067). Off. Pub. Bd., Report, PB 11967. 1945. 54 p. Price: Microfilm-$1.00 - Photostat-$4.00
The subject matter in this report was taken from classified material listing the unpublished findings of the various military services, American and Allied, as well as government and industrial laboratories working on this problem. Information is included on methods for the determination of the resistance of plastic materials to fungal attack; the susceptibility to fungal attack of synthetic resins, of plasticizers and other components, and of plastic compositions; the effect of fungal growth on properties of plastics; and the comparison of the properties of plastics containing fungicides with control samples. Bibliography included.

HORTON, A.W. Ercnel "900"; humidity tests. (Army Air Forces. Engineering Division. ESE 4-103). Off. Pub. Bd., Report, PB 11860. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of tests described in this report was to determine the corrosion protection afforded by cellulose butyrate acetate plastics. The particular plastic tested was Ercnel "900". The methods of testing are discussed and recommendations for improvement offered.

SCHWARTZ, R.T. and DUGGER, EDWARD, JR. Comparative shear data of plastics. (Army Air Forces. Experimental Engineering Section. EXP-M-56-3921). Off. Pub. Bd., Report, PB 9786. 1942. 42 p. Price: Microfilm-50¢ - Photostat-$3.00
This is a comparison of shear data on plastics from the McDonnel Aircraft Corporation, the Naval Aircraft Factory, the Forest Products Laboratory, the National Bureau of Standards, the Glen L. Martin Company, and the Materiel Division, Army Air Corps, employing various types of shearing tools, for the purpose of developing a standard procedure for determining the shearing strength of plastic materials. It was found that the differences in average results between various laboratories, although not appreciable except in the case of the special Martin type specimen, were due, in part, to the variations in rate of loading, temperature and humidity at time of test, and in preparation of the specimens. The Johnson shear tool more nearly corresponded to the three-plate tension type jig which was found to be most satisfactory. Photographs, drawings and tables are included.

TURNDAHL, H. T. Vinyl aluminum engine envelope windows. (Army Air Forces. Engineering Division. EST-6-133). Off. Pub. Bd., Report, PB 11699. 1946. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests on windows which have been developed for vinyl aluminum engine protective envelopes. A new window material was developed by the Dow Chemical Company which did not have the poor ageing characteristics of Pliofilm and Saran and did not tend to become opaque with age. This material is a lamination of Saran and ethyl cellulose plastic materials and is identified by the number Q 270.3. Tests showed this material to be very satisfactory.

WELLMAN, R. H., and MCCALLAN, S.E.A. Report on deterioration of plastics by microbial action. (OSRD Tropical Deterioration Administrative Committee, Report 44). Off. Pub. Bd., Report, PB 11996. 1944. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
A brief report on activities during September 1944, including results in tabular form of experiments on three plastics. The plastics were subjected to conditions suitable for mold growth after being inoculated with Metarhizium sps., Aspergillers niger, and an extract from greenhouse soil.

WYROSTEK, E. J. Abrasion resistance of Williams surface hardened acrylate plastics. (Army Air Forces. Experimental Engineering Section, EXP-M-56-3790). Off. Pub. Bd., Report, PB 10094. 1942. 5 p. Price: Microfilm-50¢ - Photostat-$1.00

One sample (unit serial no. 272) of 0.12b x 8" x 8" of surface treated methyl methacrylate base plastic was submitted by the American Optical Company to the Materials Laboratory for comparative abrasion tests with Army Specification 94-12014 plastic. Since no significant differences could be detected, a piece of stock acrylate conforming to Army Specification 94-12014 was forwarded to W.E. Williams for treatment by his method and return for test. No appreciable improvement in scratch resistance, mar resistance, or indentation hardness was detected for plastics treated by the Williams method compared to similar untreated plastics. This treatment does not seem to affect the physical, optical or resistance to weathering properties of acrylate base plastics, based on the tests conducted. Photographs, table and graph show results of the tests.

WYROSTECK, E. J. Adhesives for cellulose acetate and cellulose acetate butyrate plastics. (Army Air Forces. Experimental Engineering Section, EXP-M-56-3929). Off. Pub. Bd., Report, PB 7372. 1941. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this experiment was to determine properties and shear strength of adhesives submitted by the Tennessee Eastman Corporation and to find a substitute adhesive for cellulose acetate plastics to replace acetone. Tables are included.

Miscellaneous Chemicals

Belgium

JIPSON, B.B. Methanol-Belgium. (U.S. Army. Intelligence Division Report, 3559). Off. Pub. Bd., Report, PB 9645. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of the Air P/W Interrogation Unit, Main Headquarters, Second T.A.F. Contrary to expectations, the Germans made no demands on Belgium for methanol and up to 1941 they were able to export a small quantity to Belgium. The only firm in Belgium making methanol during the occupation was the Soc. Belge d' Azote et des Products Chimiques du Marly, and this whole quantity was consumed in Belgium. Production figures from January 1940 through April 30, 1944 are given in the report. At the beginning of 1944, a German visitor from the Hieg Verein told the board of the Products Chimiques that Germany had considerably increased the production of methanol and its derivatives, notably formaldehyde.

JIPSON, G.B. German control of the Belgian chemical industry. (U.S. Army. Intelligence Division Report 3558). Off. Pub. Bd., Report, PB 9646. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of Air P/W. Interrogation Unit, Main Headquarters, Second T.A.F. During the period of the occupation, the Belgian chemical industry was directly controlled by the Referat Chimie, a special section set up for the purpose under the Military Government. Referat Chimie was responsible for ensuring production and for regulating distribution in Belgium and if necessary into German channels. It did not hesitate to call in more particular expert advise. These specialists appear to have been charged to sell their ideas to the Belgians in as friendly a manner as possible, and if friendliness and persuasion failed, then only would the Military Governor be invoked to suspend recalcitrants and sequester their factories. In an appendix are listed the names of various officials from Referat Chimie, who were chosen for their technical qualities from equivalent German industries, and it maybe assumed that they have now returned and are playing a part in the organization of the German chemical industry.

German

CURTIS, FRANCIS J., and others. I.G. Farbenindustrie at Elberfeld and Leverkusen. Preliminary report to T-Force. (U.S. Army. Intelligence Division Report 3756). Off. Pub. Bd., Report, PB 9702. 1945. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of a visit in April 1945, and interviews of personnel by CIOS team no. 110, giving a resume of work being done at the Elberfeld and Leverkusen plants. This includes: 1. War gases and allied war materials: Liquid for producing fire (ClF_3); hydrazine hydrate ($NH_2NH_2.H_2O$); tear gas ($HOOOC\ Cl_3$); materials for destroying CN Cl; fogs and apparatus for their production; colored smoke for signals; intermediates for war gas; continuous process for mustard gas; thionychloride ($SOCl_2$); charcoals for gas masks. 2. Insecticides: Lausetoold; Lausetо-new; Luce; Bladan; lousicidal agents; mosquito repellant 50/181; Me 1700; D 1210. 3. Pharmaceuticals: Sulfa drugs - sulfathiasole or Elendron, Narfanil, sulfapyridine, Bardional; antimalarials; tropical diseases; chemotherapy of virus and Rickettsial diseases; general and local anaesthetics; antibacterial agents; hormones and vitamins. 4. Plastics: polyurethanes; ethyl cellulose, benzyl cellulose, Cellaprit (mono acetyl cellulose). 5. Miscellaneous chemicals: Acrylonitrile; chlorbenzol, nitrochlorbenzol; diphenyl; chlordiphenyls; salicylic acid; sodium salicylate; phosgene; phenol; aspirin.

ECCLESHALL, D. Report on visit to J.D. Riedel de Haen A.G., Seelze/Hanover. (CIOS Evaluation Report 385). Off. Pub. Bd., Report, PB 12648. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The factory at Seelze was concerned mainly with the production of metallic fluorides, silico fluorides, hydrogen fluorids, phosphoric acid, phosphates, sulphuric acid, ether, colloidal graphite, water purifying agents and general reagents for laboratory analytical work. One building was set aside for smoke mixtures, another for the production of chloracetophenone. 120 tons/month of chloracetophenone were produced by the following process:
$3(C_6H_5COCH_3) + NaClO_3 + 3HCl \longrightarrow 3(C_6H_5CO.CH_2Cl) + NaCl + 3H_2O$.

FARAGHER, W.F. and HORNE, W.A. Manufacture and regeneration of catalysts at I.G. Farbenindustrie, Ludwigshafen Oppau. (FIAT Final Report 422). Off. Pub. Bd., Report, PB 7743. 1945. 14 p. Price: Microfilm-50¢ - Photostat-$1.00
The principal equipment in the plants inspected is presented in the form of flow sheets for the manufacture of four of the principal catalysts. Five additional catalysts are also described. Brown-oxide, methane-splitting, activated alumina, tungstic acid catalysts and a catalyst for the hydrogenation of acids, esters, aldehydes and ketones to the corresponding alcohols are included.

GERMANY. REICHSFORSCHUNGSRAT. Arbeitsstab: Chemische Forschung u. Entwicklung. (Discussions on expansion of the chemical research program, methods of recruiting and training new chemists and improving cooperation among the various sections within the Department of Chemistry). (RFR 206). Off. Pub. Bd., Report, PB 12760. 1943-1944. 182 p. Price: Microfilm-$2.00 - Photostat-$13.00

GERMANY, REICHSFORSCHUNGSRAT. Der Leiter der Fachsparte allgemeine und an-organische chemie. Prof. Thiessen. (Administrative problems and outlines of research projects within the Department of Chemistry of the RFR). (RFR 284) Off. Pub. Bd., Report, PB 12874. 1943-1944. 161 p. Price: Microfilm-$2.00 - Photostat-$11.00

GERMANY, REICHSFORSCHUNGSRAT. Der leiter der fachsparte organische chemie. (Prof. Kuhn- RFR section organic chemistry: Correspondence relating to administration of research projects). (RFR 236). Off. Pub. Bd., Report, PB 12829. 1943-1944. 114 p. Price: Microfilm-$1.50 - Photostat-$8.00

KIRKPATRICK, SIDNEY D. Report on visit to Deutsche Gasrusswerke G.m.b.H., 179-181 Lutgehaide Strasse, Dortmund. (SHAEF-FCA-G4. Serial 4). (Off. Pub. Bd., Report, PB 8278. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of carbon black plant inspection and interview of personnel, including Dr. Hans Bache, technical director and one of the inventors of the Degussa process. This plant was planned and built late in 1938 at an estimated cost of $2,000,000. Present capacity is 15,000 metric tons per year. The process and equipment used at Dortmund are exactly the same as used in the older Degussa plant at Kalscheuren except that anthracene, rather than naphthalene, is the chief raw material. Bomb and artillery damage seems to have been confined largely to the main office building and to one of the furnace buildings. In view of the urgent need for carbon black by Belgian and French tire plants, it was recommended that the large stocks at Dortmund be used immediately and the plant be put into full production if an adequate supply of anthracene can be obtained.

LOASBY, G. and BROWN, F.S. Acetic acid recovery, aceto-butyric acid recovery, propionic acid recovery at I.G. Farben, Dormagen. (FIAT Final Report 144). Off. Pub. Bd., Report, PB 11374. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Weak acetic acid of 20 to 25 per cent concentration is converted into glacial acetic acid by extraction with ethyl acetate in a tower and subsequent distillation of the ethyl acetate-acetic acid layer. Aceto-butyric anhydride is produced from weak acids by extraction with benzene, which removes the weak acids. These are rectified by distillation. Acetic acid liquors remaining after extraction are concentrated by tower extraction with ethyl acetate. Propionic acid is recovered from weak liquors by extraction with ethyl acetate. The processes are well known, the yields normal, and the plant equipment of the conventional type. Diagrams.

MONRAD, C.C. The Reppe butadiene process: Summary report. (Reconstruction Finance Corporation. Office of Rubber Reserve. Research and Development Section. CRR No. G-2). Off. Pub. Bd., Report, PB 9693. 1945. 24 p. Price: Microfilm-50¢ - Photostat-$2.00
Although most of the butadiene produced in Germany is made by the so-called aldol process, a new synthesis was found to be in use at the Ludwigshafen plant of I.G. Farbenindustrie. It is based upon the reaction of acetylene and formaldehyde by a method developed by Dr. W. Reppe as one of a number of new acetylene reactions. This basic reaction appears to be an entirely new discovery and follows the equation: $2\ CH_2O + C_2H_2 \rightarrow HO\text{-}CH_2\text{-}C \equiv C\text{-}CH_2\text{-}OH + 55$ Kcal. The resulting butynediol is then converted into butylene glycol which is finally dehydrated to butadiene. The inspection of the plant and interrogation of chemists there revealed that the process is technically sound and operable on a large scale. It is the present conclusion of the operators at Huls and Schkopau however, that the Reppe process is basically inferior to the aldol process for butadiene manufacture. Though it probably has little utility in U.S. for butadiene production, it may be of considerable interest in production of other organic chemicals. Includes a graph, three flow sheets and a bibliography.

MUMFORD, S.A. Interrogation of Dr. Haberland, Director of I.G. Factories on Lower Rhine. (CIOS Target 22/1751). Off. Pub. Bd., Report, PB 6655. 1945. 6 p
Price: Microfilm-50¢ - Photostat-$1.00
Dr. Haberland gave some information on the general types and quantities of chemicals manufactured in the four factories under his direction, but his knowledge of technical details was limited. Apart from incidental preparation and use of phosgene and cyanogen chloride in the production of intermediates, and the Adamsite manufacture described, there was no significant evidence of chemical warfare production.

REPPE, JULIUS WALTER. Autobiography. (U.S. Army. Intelligence Division Report 4177). Off. Pub. Bd., Report, PB 9695. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Short autobiography of the Director of the I.G. Farben A.G. Born on July 29, 1892; he studied at the universities of Jena and Munich, the title of his doctor's thesis in 1920 being "About the reduction mechanism of diaryl-nitric acid". He worked in the laboratories of the Academy for Science in Munich, and Badische Anilin-und Sodafabrik in Ludwigshafen, became director of the newly founded "Intermediate Plastic Laboratory", director of the central laboratory of the I.G. in Ludwigshafen, and in 1939 director of I.G. Farben A.G. Some of his studies were the synthesis of alcohol from carbide; of butanol; synthesis of butylamine and ethylamine which were obtained by the hydrogenation of the corresponding aldehyde-ammonia mixtures in the liquid phase; reversal of the carbide alcohol process; dehydrogenation of ethyl alcohol to acetaldehyde; catalytic hydrogenation of indigo to indigo white; synthesis of butadiene according to the classical 4-step process; fractionation of coke oven gas; vinylation of acid-amides; synthesis of quarternary vinyl ammonia compounds; and many others. Research activities were focused on the reaction of simple compounds, such as acetylene, ethylene, water, carbon monoxide, hydrogen, formaldehyde, ammonia, etc., and their conversion into valuable products with a very high chemical reactivity in the presence of special catalysts. The second part of his work was concerned with the development of the newly discovered synthesis from a laboratory scale to a commercial plant scale.

SCOTT, CLARENCE W. Report of visit to I.G. Farben at Ludwigshafen. Section 22 - Miscellaneous chemicals. (U.S. Army. Intelligence Division Report 3706). Off. Pub. Bd., Report, PB 9696. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
The investigation of this target by CWS representatives in March 1945 was done under most adverse circumstances, resulting from the area being in active combat zone; the complexity and size of target; (30,000 employees in a 2 square mile area) and the limited time available. With emphasis placed on oil and rubber, little time was given to miscellaneous chemicals. Noteworthy, however, were chlorine produced in mercury cathode cells; and sulphuric acid production involving (1) roasting sulfide ores, (2) spent oxide, (3) burning sulfur, (4) gypsum; Part II of this report covers a visit to the plant of Dr. Raschig-Ludwigshafen, on March 27, 1945. Plant production here was comparatively little affected by bombing, most of the curtailment being due to lack of raw materials and fuel. The plant is essentially a coal tar plant. Products and production figures are given. The synthesis phenol pilot plant process consists of two basic operations: (a) Benzol, hydrogen chloride and air are passed over a catalyst to produce chlorbenzene and water; (b) chlorbenzene and steam are passed over a second catalyst to produce phenol and hydrogen chloride. The hydrogen chloride is returned to the process in operation (a). Except for the synthetic phenol operation, and the method of heating tar stills, the methods used in this plant are the usual methods employed in coal tar operations everywhere. Tar stills were heated by water under 200 atmos. pressure and at temperatures well above the critical, the water being circulated by a thermal syphon.

United States

AARONSON, H. Study of Desseigne process for preparation of tetryl from methylamine. (Picatinny Arsenal Technical Report 1047). Off. Pub. Bd., Report, PB 3046. 1940. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
A study at the Arsenal several years ago showed that tetryl in good yield could be prepared by the reaction of dinitrochlorbenzene and methylamine to form dinitromethylaniline and the subsequent nitration of this to tetryl. Recently pure methylamine has become commercially available, and a study has been made showing that the yield of crude tetryl by this process was from 94 to 95 percent of the theoretical. This process being less expensive than the present stand its semi-plant scale study is recommended.

ADKINS, HOMER "Preparation of esters of α,α'-dibromo or dichloro dibasic acids", progress report to June 1, 1943. (OSRD Report 1629). Off. Pub. Bd., Report, PB 6529. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
Experimental procedure is given for the preparation of six dihalogenated dicarboxylic esters to be tested as possible delayed action lachrymators. Tables give the boiling points and estimated vapor pressures. This is a progress report under contract with the University of Wisconsin.

BAILEY, BRUCE S. Reclamation of ethylene glycol. (Army Air Forces. Experimental Engineering Section. EXP-M-87-523-187). Off. Pub. Bd., Report, PB 8134. 1942. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were conducted to determine whether used ethylene glycol could be successfully reclaimed by a process of distillation and reinhibition, to determine whether the reclaimed ethylene glycol would pass all applicable AAF Specifications for high temperature coolants, and to comment on the adaptability of this method for reclaiming used ethylene glycol to the service activities. It is concluded that ethylene glycol can be successfully reclaimed by a process adaptable for use both in the field and at the depots. Appendices contain additional information on the reclaiming unit and the use of the unit by service personnel.

BRADDALE, EDWARD L. and others. The effect of organic matter decomposition on the liberation of H. (Chemical Warfare Service. TRLR 38). Off. Pub. Bd., Report, PB 11560. 1944. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes experiments aiming at the determination of the effect which the decomposition of organic matter in soils would have on the rate of liberation of H (mustard gas). The results indicate that organic matter and the state of its decomposition exert an influence on the rate and quantity of H liberated from a soil. Greater decomposition favors greater retention.

CHRISTENSEN, WILLIAM R. Fuel, ration heating, methenamine, efficiency and military characteristics. (Quartermaster Corps. Climatic Research Laboratory Report 172). Off. Pub. Bd., Report, PB 8259. 1945. 22 p. Price: Microfilm-50¢ - Photostat-$2.00
This report is a presentation of the collected results of experiments investigating the caloric efficiency, optimum shape and size of unit, proper method of combustion, and techniques for protecting the moisture-sensitive fuel methenamine. When burned under favorable conditions, the efficiency of methenamine fuel is excellent, being slightly superior to that of metaldehyde. A unit weighing 5 grams and shaped in the form of a cylindrical section 7/8 inch in diameter and 3/8 inch in height has a caloric efficiency equal to that of any other size of unit available and is acceptable as a military item. The utility and efficiency of methenamine fuel tablets are seriously affected by their extreme moisture sensitivity, but this defect may be overcome by impregnation of the tablets with refined montan wax. Tables are included.

EHRLICH, F.F. Solvent-vapor absorption on silica gel. (Army Air Forces. Engineering Division. ESE-4-88). Off. Pub., Bd., Report, PB 11870. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report covers tests made on means to minimize or eliminate the adsorbing power the silica gel in fiberboard cartons shows to the vapors of the solvent in the Davison Chemical Corporation's Protek-Coat, an asphaltic-base substance, for water proofing containers. The method of these tests and their results are described.

FOGELBERG, J.M. and BRINNICK, F.E. First partial report on the use of chemical materials as shark repellents. (Naval Research Laboratory Report P-2230). Off. Pub. Bd., Report, PB 12617. 1944. 34 p. Price: Microfilm-50¢ - Photostat-$3.00
The development of a material designed for the protection of personnel from attack by sharks is described. Results are given of the laboratory development and field tests. The effectiveness of several substances in protecting baits has been demonstrated under various conditions. A dark water-soluble dyestuff has been shown to be particularly effective as a repellent material against sharks under normal fishing conditions both in daylight and at night and against excited sharks on the surface. A repellent material consisting of 80% dye with 20% copper acetate is also described. Tentative specifications for the procurement of all materials are given. Drawings and photographs.

FOLKERS, KARL and others. Preparation and testing of substances as neutralising or therapeutic agents for H burns. Formal report for period September 1, 1942 to August 31, 1943. (OSRD Report 3249). Off. Pub. Bd., Report, PB 6522. 1944. 43 p. Price: Microfilm-50¢ - Photostat-$3.00
This report summarizes tests with a wide variety of substances on the prevention or therapy of H burns on rabbits. Although in the majority of cases only one rabbit was used in testing each preparation, the results indicate nothing more than a slight surface-decontaminating action in any case. No substance tested had any beneficial effect on burns produced by H sulfone. This report consists largely of tables.

FUSON, R.C. and MARVEL, C.S. Report on "Catalytic production of homologues of cacodyl and their derivatives", to March 27, 1942. (OSRD Report 507). Off. Pub. Bd., Report, PB 6006. 1942. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of experimentation carried on at the University of Illinois. The reaction between an aliphatic acid and arsenious oxide over an alkali carbonate catalyst has been extended to include propionic acid. There is every reason to believe that homologues of cacodyl can be obtained by this process. Oxidation of the cadet's liquid, obtained catalytically from acetic acid and arsenious oxide, is an excellent method of making cacodylic acid whose salts have medicinal value. The experiments are described in some detail. For a previous report on this subject, see OSRD 326 (PB 5551 on p. 477).

GILMAN, HENRY. Organo lead compounds as sternutators: Progress report to December 15, 1942. (OSRD Report 1517) Off. Pub. Bd., Report, PB 6528. 1943. 35 p. Price: Microfilm-50¢ - Photostat-$3.00
A series of organolead salts has been prepared by three general procedures, details of which are included. These salts were derived from a variety of acids, such as substituted acetic acids, unsaturated aliphatic acids, arylcarboxylicacids, heterocyclic acids, alkyl and aryl sulfonic and sulfinic acids, and polybasic acids. On the basis of simple, orienting tests it appears that practically all of the triethyllead salts have sternutatory activity. None of the diethyllead salts exhibited sternutatory action. No adequate method of quantitative evaluation of sternutators is yet available. Tables and a bibliography are included. This is a progress report under contract with Iowa State College.

GILMAN, HENRY. "Thallium compunds", progress report to February 26, 1943. (OSRD Report 1504). Off. Pub. Bd., Report, PB 6527. 1943. 33 p. Price: Microfilm-50¢ - Photostat-$3.00
Experimental procedures are given for preparing fifty-two thallium compounds, most of them volatile. Initially they were examined as toxic metallic oxides. Then some R_2TlX types were prepared and examined for possible vesicant action. The large number of R_3PbX compounds possessing sternutatory properties prompted the preparation of di-n-propylthallium-d-camphor-10-sulfonate. This is a progress report under contract with Iowa State College. Includes a bibliography.

HAMILTON, CLIFF S. "Organic arsenicals", progress report to July 1, 1943. (OSRD Report 1797). Off. Pub. Bd., Report, PB 6812. 1943. 59 p. Price: Microfilm-$1.00 - Photostat-$4.00
This report describes the experimental procedures used in the preparation of forty-one organic arsenic compounds for toxicity testing. All three groups of trivalent arsenicals ($RAsX_2$, R_2AsX and R_3As) are represented. The carbon-containing radicals R^3 include aliphatic, aromatic and heterocyclic types. The X and X_2 groups in the above formulas include: Cl, Br, O, CN, SCN, H, NC_5H_5, OC_3H_7, $OCOCH_3$, OCH_3. Arsenic and arsinic acids have been prepared from six arsenic compounds which might be encountered as chemical warfare agents. Through its description of procedures employed for the preparation of fifty arsenicals, the report provides a useful survey of the methods available for the synthesis of many classes of organic arsenic compounds. This is a progress report under contract with the University of Nebraska. Forty-one references are included.

HURD, CHARLES D. "Synthesis of various amino acids", progress report to November 30, 1943. (OSRD Report 3065). Off. Pub. Bd., Report, PB 6814. 1944. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
A number of amino acids were needed in order to study their effect in counteracting phosgene poisoning in animals. Directions are submitted for the preparation of seven compounds. New reactions were developed for 2, 4-diamino-butyramide dihydrochloride, aspartamide and 3,4-diamino-benzenesulfonic acid. Twelve references are given. This is a progress report under contract with Northwestern University.

KENDALL, C. W. Unsatisfactory report on pyrogallic acid. (Army Air Forces. Experimental Engineering Section. U-EXP-M-59-680-10). Off. Pub. Bd., Report, PB 7143. 1940. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
The bottle of Pyrogallic acid which is the subject of this report was somewhat discolored but still useful for photographic use. A letter from the Eastman Kodak Company concerning this bottle of Pyro is in the appendix.

KUNITZ, M., McDONALD, MARGARET R., and NORTHROP, JOHN H. Progress report on "Crystalline Hexokinase (Heterophosphatase)". Off. Pub. Bd., Report, PB 6535. 1943. 22 p. Price: Microfilm-50¢ - Photostat-$2.00
The enzyme hexokinase has been considered by some investigators as one of the vulnerable points within the cell, injury of which by mustard gas and related vesicants causes vesication. Crystalline hexokinase, which has been isolated from baker's yeast, is a protein of albumin type of a molecular weight of 96,000. Its isoelectric point is at about pH 4.8. The enzymatic activity is associated with the protein nature of the material. Inactivation is accompanied by denaturation of the protein. Crystalline hexokinase requires the presence of magnesium ions for its catalytic activity. Tables and photographs.

LEITCH, JAMES L., FELL, RICHARD R., and BAUER, VIRGINIA E. Purification of water contaminated with mustard or lewisite by treatment with Columbia activated carbon, grade 6P, 200 mesh. (Chemical Warfare Service. Medical Division. MD(EA) Memorandum Report, 71). Off. Pub. Bd., Report, PB 11340. 1942. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
Subject charcoal has been found efficient for the removal of mustard or lewisite when these are present in water in concentrations of 20, 50 or 100 p.p.m. Approximately one-third less carbon is required for the satisfactory purification of water contaminated with lewisite than for water contaminated to the same degree with mustard. Minimum carbon-contaminated ratios required for purification are given and tables are included.

LODER, D. J. New methods for synthesizing alkanolamines for use in vesicants. Synthesis of ethanolamines by continuous hydrogenation from formaldehyde and hydrogen cyanide: Final report to May 26, 1943. (OSRD Report 1961) Off. Pub. Bd., Report, PB 6553. 1943. 36 p. Price: Microfilm-50¢ - Photostat-$3.00
The most economically attractive process developed during this investigation involves 1) preparation of ethoxy-methoxyacetonitrile from formaldehyde cyanhydrin and ethylal, 2) continuous hydrogenation of ethoxymethoxyacetonitrile to the corresponding secondary amine, 3) ethylation with ethyl sulfate and sodium carbonate, and 4) alcoholysis to yield N-ethyldiethanolamine. The hydrogenation in step 2 was found to proceed more smoothly than the hydrogenation of formaldehyde cyanhydrin. The data developed indicates that N-ethyldiethanolamine produced by this process at an annual rate of 10,000,000 lb. would cost 25-30¢ per lb. as the hydrochloride. Tables, graphs and a diagram are included. This is a final report under contract with E.I. duPont de Nemours and Company.

MACE, DON L. and GINSBURG, T.H. Fire and explosion hazard in the gas casualty set, veterinary. (Chemical Warfare Service. Medical Division MD(EA), Memorandum Report 102). Off. Pub. Bd., Report, PB 11439. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Investigation was carried on to determine whether fire or explosion might be caused by accidental mixing of drugs contained in the Army Gas Casualty Set, Veterinary. Data presented in tabular form indicate that potassium permanganate and calcium hypochlorite when packed into the same chest with readily oxidizable organic compounds constitute a fire and explosion hazard. Therefore it is recommended that these two powerful oxidizing agents be packed separately.

MANKOWICH, IVAN, and others. Decontamination of chemical warfare agents. (Chemical Warfare Service. CWS Field Lab. Memo 3-4-2). Off. Pub. Bd., Report, PB 11534. 1945. 63 p. Price: Microfilm-$1.00 - Photostat-$5.00
A very thorough dissertation on decontaminating apparatus and material used or usable in the field, methods of decontaminating skin and various surfaces, methods of chemical decontamination and comparative table of decontamination as practiced in the USA, Great Britain, Germany, Itay and Japan.

MARGUAND, C.B. and others. Stability of peroxides and solid oxidizing agents. (Chemical Warfare Service. MD(EA) Memorandum Report 87). Off. Pub. Bd., Report, PB 11383. 1943. 19 p. Price: Microfilm-50¢ - Photostat-$2.00
This report covers an investigation of the stability of liquid and solid peroxides and related compounds made in order to find a medium for treating liquid lewisite burns in the field. A bibliography, tables, and graph are included.

MARVEL, C. S., and FUSON, R. C. Report on "The corrosion of metals by mustard gas", to July 30, 1942. (OSRD Report 855). Off. Pub. Bd., Report. PB 5592. 1942. 43 p. Price: Microfilm - 50¢ - Photostat - $3.00
The purpose of the experiments reported was to determine the causes of pressure development and decomposition of HS in contact with metals and to find a means of preventing these changes. "The work on prevention of corrosion by mustard gas has shown that sulfurized quinoidine and phosphorus pentoxide are good agents to add to mustard to decrease corrosion in steel. Use of Parkerized steel is also to be recommended." There is discussion of the decomposition and stabilization of HS from thiodiglycol and Levenstein HS; also description of the experiments.

MILLER, C. E. The toxicity of hydroxy-4-butadiene-1,2. (Chemical Warfare Service. Edgewood Arsenal Technical Report, E.A.T.R. 150). Off. Pub. Bd., Report, PB 6373. 1933. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
The object of the work described in this report was to obtain sufficient data so that an estimate could be made of the value of hydroxy-4-butadiene-1,2 as a chemical warfare agent. It was concluded that it has no value as a chemical warfare agent. Graph.

SCHLESINGER, W. Coolant, some physical properties of. (Army Air Forces. Experimental Engineering Section. EXP-M-57-523-99). Off. Pub. Bd., Report, PB 8205. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests to determine some physical properties of Power Plant coolant no. 2. The solubility of air in the coolant at 22.2°C and 743 mm. pressure was .104 ml/g. The density was 1.5703 at 20°C. The density-temperature coefficient was .00121 gm./ccm./°C. The distillation range is shown in a table.

SEOUGH, A. H. Densities and absolute viscosities of a glycol-water solution. (Army Air Forces. Experimental Engineering Section. EXP-M-57-523-98). Off. Pub. Bd., Report, PB 8132. 1941. 2 p. Price: Microfilm-50¢ Photostat-$1.00
Densities and absolute viscosities of an ethylene-glycol water solution at 200°F., 250°F., and 300°F. are presented in tabular form.

SKINER, R. L. "Synthesis of some alkyl carbamates and alkyl dithiocarbamates", progress report to March 15, 1943. (OSRD Report 1357). Off. Pub. Bd., Report, PB 6523. 1943. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
A description of the synthesis of the following compounds is given: n-butylcarbamate, n-hexylcarbamate, n-octylcarbamate, n-decylcarbamate, n-dodecylcarbamate, γ-aminopropylcarbamate, n-propyldithiocarbamate and n-amyldithiocarbamate. This is a progress report under contract with Indiana University. Will not reproduce well.

SKINER, R.L. Synthesis of some basic esters related to choline and its derivatives: Progress report to December 22, 1942. (OSRD Report 1356). Off. Pub. Bd., Report, PB 6524. 1943. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
The formates and acetates of β-dimethylaminoethanol, β-(N, N-methyl ethyl) aminoethanol, β-diethylaminoethanol, methyl-bis-(β-hydroxyethyl) amine, and the formic ester of choline chloride were prepared in order to test their vesicant and toxic effects. The acetates of the basic carbinols were prepared by the action of acetic anhydride on the alcohols, followed by fractional distallation. The formates were prepared by direct esterification with formic acid with continuous removal of water by azeotropic distillation with benzene or toluene. None of these formates appeared pure. Yields obtained are given in tables and references are included. This is a progress report under contract with Indiana University.

TARBELL, D.S., and LINDSTROM, E.G. Additional observations on the synthesis of thiocarbazones, especially DPT, to November. (OSRD Report 4411). Off. Pub. Bd., Report, PB 5860. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
A method is described for coupling of diazonium compounds with nitromethane to form a nitroformazyl which in turn can be converted into a thiocarbazone. The mechanism of the reaction is discussed and the preparation of di-(orthophenoxyphenyl)-thiocarbazone (DPT) and diphenylthiocarbazone, (dithizone) is detailed.

TEMPLE, S. Preparation of diphosgene. (OSRD Report 1437). Off. Pub. Bd., Report, PB 6546. 1943. 26 p. Price: Microfilm-50¢ - Photostat-$2.00
Progress report of experimentation to April 28, 1943, by the Electrochemicals Department of E.I. duPont de Nemours and Company. The laboratory preparation of diphosgene is described in OSRD Report 504 (PB 6003). This report describes in detail the preparation for the Chemical Warfare Service of 1000 pounds of diphosgene (perchloromethyl formate) and the development of a process on pilot plant scale adaptable to large scale manufacture. The chlorination of methyl formate to diphosgene was achieved with a yield of 86% based on methyl formate. Report contains flow sheets, density-temperature chart and tables of diphosgene production in training period, and in pilot plant. PB 6003 is reported on p. 479.

U. S. WAR DEPARTMENT. Chemical Warfare Service. Field laboratory safety regulations. (CWS Field Lab. Memo. 4-4-1). Off. Pub. Bd., Report, PB 11543. n.d. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
Safety instructions for handling dangerous chemicals and laboratory containers, as well as first-aid measures for several chemical warfare agents, are given.

WHIPP, H. Design memorandum for a pilot plant to prepare 10 cwts. per week of re-distilled cyanogen chloride. (U.S. Army. Intelligence Division Report 3497). Off. Pub Bd., Report, PB 9700. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
Up to February 1944, crude cyanogen chloride had been made in small quantities in the Sutton Oak Development Laboratories. As further demands were to be met, it was decided that a pilot cyanogen chloride plant should be designed, incorporating existing equipment, and making provision at the same time for redistillation of the crude product. This memorandum gives a complete description of the process and of the design of the plant. The process consists of (1) chlorinating an aqueous solution of hydrogen cyanide with chlorine at 0-5°C., the reaction being represented by $HCN\ aq. + Cl_2 \longrightarrow CNCl + H\ Cl\ aq.$; (2) stripping of cyanogen chloride from dilute hydrochloric acid; (3) distillation of the crude cyanogen chloride. The plant site and layout, details of equipment, raw materials and service requirements, and cost estimates are discussed. A batch flowsheet, and diagrams showing the plant scheme and plant layout are given.

ELECTRICAL MACHINERY, EQUIPMENT, AND SUPPLIES

Communication Equipment

AUGUSTINE, R. W. Industrial survey of plants, methods and products in German telephone industry. (FIAT Final Report 526). Off. Pub. Bd., Report, PB 7762, 1945. 45 p. Price: Microfilm-50¢ - Photostat-$3.00
This survey contains descriptions of plants and telephone products of the following firms: Neufeldt and Kuhnke G.m.b.H. Hanseatiche Apparatbau Gesellschaft, Kiel; Friedrich Mork Telephonbau Aktiengesellschaft, Munich; Electro Acoustic K.G., Kiel; Vereingte Bayresche Telephon Werke, A.G. (Branch of Siemens Halske), Munich; Osnabrucker Kupfer-u Drahtwerk, Osnabruck; and Mix and Genest Aktiengesellschaft Stammhaus, Berlin. A schematic circuit of the Mix and Genest Automatic system and operating notes are missing from this copy. The account of Electro Acoustic K.G. (ELAC), is especially interesting, as this plant was engaged in research during the war in conjunction with problems concerning the underlying principles involved in the design and construction of equipment and instruments to be used in the guidance and firing of explosive missiles by means of electrical and accoustical energy through water. Also included is a brief note on a lacquer coating under the trade name "Duapon" manufactured by Paul Lechler, Fauerbach at Stuttgart. Appended to the report is a glossary of terms and definitions used in the German telephone industry.

HOLABIRD SIGNAL DEPOT. Fernschreibgerätelehre (Basic teletype components). (Captured Enemy Equipment Report T-3) Off. Pub. Bd., Report, PB 11354. 1945. 54 p. Price: Microfilm - $1.00 - Photostat - $4.00
This document gives, in text book form, a brief history of tele-communication by wire, ending with the teletype system, and an elementary description of teletype system, apparatus and operation. It is a translation from a German manual printed by the Air Force and Signal School, Halle, Germany, in 1941. Chapters on constructional elements and electronic parts and diagrams are included.

Electronics

German

U. S. ARMY. SIGNAL CORPS. ENEMY EQUIPMENT INTELLIGENCE SERVICE TEAM #11 SIGNAL SECTION. Handbook on German radio equipment and tubes. (EEIS-11-6). Off. Pub. Bd., Report. PB 11357. 1944. 8 p. Price: Microfilm - 50¢ - Photostat - $1.00
This report lists German radio equipment giving the number and type of tubes each set requires.

U. S. ARMY. SIGNAL CORPS. GROUND SIGNAL AGENCY. German transciever, Feldfu b. (Captured Enemy Equipment Report 52). Off. Pub. Bd., Report. PB 11355. 1945. 25 p. Price: Microfilm - 50¢ - Photostat - $2.00
This document contains a detailed description of the German Radio Set Feldfu b which is a transciever operating in the frequency range of 90 mc to 110 mc. A number of unusual features which warrant further investigation by American engineers are pointed out. This report was prepared and compiled by Captured Equipment Section, Applied Communication Branch, Coles Signal Laboratory.

United States

ARNOLD, HUBERT A. and others. Evaluation of the function

$$C(b,h) = \int_0^h \frac{\cos\sqrt{x^2+b^2}}{\sqrt{x^2+b^2}}\,dx$$

(Navy Dept. Bureau of Ships. Computation Project. Report 10). Off. Pub. Bd., Report. PB 12623. 1944. 8 p. Price: Microfilm - 50¢ - Photostat - $1.00
The integral C(b,h) occurs in the theory of coupled antennas. Subject report, which includes a table, was prepared at Harvard University. For treatment of the integral S(b,h) see Bureau of Ships. Computation Project. Report 2. (PB 12622), under Campbell, Robert V.D.

RADGER, S. Inspection and test of radio receiving set AN/ARW-26(XA-1). (Army Air Forces. Engineering Division. TSERR2C-65). Off. Pub. Bd., Report. PB 9706. 1945. 29 p. Price: Microfilm-50¢ - Photostat-$2.00
Report of an inspection and test whose purpose was to determine whether or not the performance of this set submitted by Setchell-Carlson was consistent with the military requirements and whether the mechanical and electrical characteristics comply with Signal Corps Specification no. 271-5120. This receiving set is the airborne receiver of the radio control system used to radio control small airborne targets. Report discusses electrical and mechanical characteristics, tube complement, test procedure and results. The equipment is of such design and performance characteristics (after some mechanical and electrical defects were corrected) as to be considered satisfactory as the standard for procurement. Report includes photographs of equipment and test results shown in tabular and graphic form.

BENNETT, FREDERICK D. and MEIER, ALLEN S. Experimental study of rectangular slot antenna. (Army Air Forces. Engineering Division. TSERR2C-14). Off. Pub. Bd., Report, PB 9704. 1945. 59 p. Price: Microfilm-$1.00 - Photostat-$4.00
This report contains a study of impedance as a function of slot and cavity parameter of a rectangular slot antenna for the purpose of estimation of its broad band properties as a load for a 50 ohm line. The slot antenna is described as well as the experimental method used. A collection of graphs of bandwidths and band center frequencies as functions of various slot parameters permits the choice of a slot most suitable to the devised band width.

BLANCHARD, D. E. Location of anti-tank mines - XIII-Scale model for determining the effects of conducting bodies and conducting media in induction fields. (Hazeltine Service Corp. Report 1235 W). Off. Pub. Bd., Report, PB 6563. 1941. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
The object of this report is to describe the measuring equipment, scale model and procedure used for measuring the effects of conducting bodies and conducting media in induction fields. The transmitter source is a Ferrio model 22, a standard signal generator coupled to a transmitter circuit through a matching transformer. The receiver is a superheterodyne consisting of a shielded, self-contained battery operated converter stage with a tuned input circuit and a model S20R Hallicrafters communications receiver used as an i-f amplifier. Detailed description of the equipment and its operation is given. A circuit diagram, a blueprint of the attenuator construction, and photographs are included. See PB 6568 for interpretation of tests on scale model, under Wheeler, H.A.

CAMP EVANS SIGNAL LABORATORY. Electron tube 2J30, 2J31, 2J32, 2J33, 2J34. (Specification 71-2034, revised April 29, 1943). Off. Pub. Bd., Report, PB 12673. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
This specification for a magnetron is obsolete; refer to JAN-2J30, 2J31, 2J32, 2J33, 2J34, 4 November 1944.

CAMP EVANS SIGNAL LABORATORY. Electron tube 2J45, 2J46, 2J47. (Specification 71-2054, 28 June 1943). Off. Pub. Bd., Report, PB 12681. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
This specification for a magnetron is obsolete; refer to JAN-2J45, 2J46, 2J47, 4 November 1944.

CAMP EVANS SIGNAL LABORATORY. Electron tube 417-A. (Specification 71-2044, revised 13 September 1943). Off. Pub. Bd., Report, PB 12677. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
Details of test conditions for a velocity variation tube are given. This specification is obsolete; refer to JAN-417A 4 November 1944.

CAMP EVANS SIGNAL LABORATORY. Electron tube 434A. (Specification 71-2040, revised 1 October 1943). Off. Pub. Bd., Report. PB 12676. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
This specification for a triode is obsolete; refer to JAN-434A, 4 November 1944

CAMP EVANS SIGNAL LABORATORY. Electron tube 446-A. (Specification 71-2062, March 24, 1943). Off. Pub. Bd., Report. PB 12683. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
Details of specification for an U-H-F triode are given.

CAMP EVANS SIGNAL LABORATORY. Electron tube 471-A. (Specification 71-2038, revised 10 June 1943.) Off. Pub. Bd., Report. PB 12675. 1943. 1 p. Price: Microfilm - 50¢ - Photostat - $1.00
Test conditions are given for a hydrogen protective gap. This specification is obsolete; refer to JAN 471-A, 4 November 1944.

CAMP EVANS SIGNAL LABORATORY. Electron tube 532-A. (Specification 71-2033, revised 10 June 1943) Off. Pub. Bd., Report. PB 12674. 1943. 1 p. Price: Microfilm - 50¢ - Photostat - $1.00
This specification for a spark gap protector is obsolete; refer to JAN-532A.

CAMP EVANS SIGNAL LABORATORY. Electron tube 700A, 700B, 700C, 700D. (Specification 71-2051, 27 July 1943) Off. Pub. Bd., Report. PB 12678. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
This specification for a magetron is obsolete; refer to JAN-700A, 700B, 700C, 700D, 4 November 1944

CAMP EVANS SIGNAL LABORATORY. Electron tube 718AY, 718BY, 718CY, 718DY, 518EY. (Specification 71-2052, 11 March 1943). Off. Pub. Bd., Report, PB 12679. 1943. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00
This is the first draft of a specification for a magnetron.

CAMP EVANS SIGNAL LABORATORY. Electron tube 6021. (Specification 71-2053, May 15, 1943). Off. Pub. Bd., Report, PB 12680. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
Details of specification are given for a pulse amplifier triode.

CAMP EVANS SIGNAL LABORATORY. Electron tube VU-111. (Specification 71-2061, Revised 24 May 1944). Off. Pub. Bd., Report, PB 12682. 1944. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
This tentative specification for a half-wave high vacuum rectifier is obsolete; refer to JAN-VU 111. 30 October 1944.

CAMPBELL, ROBERT V.D. Evaluation of the function

$$S(b,h) = \int_0^h \frac{\sin \sqrt{x^2 + b^2}}{\sqrt{x^2 + b^2}}\, dx$$

(Navy Dept. Bureau of Ships. Computation Project. Report 2). Off. Pub. Bd., Report, PB 12622. 1944. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00
The integrals S(b,h) and C(b,h) arise in connection with coupled antennas. This report is concerned with the computational procedure for the first of these. A table is included. The work was done at Harvard University. For treatment of the integral C(b,h) see Bureau of Ships. Computation Project. Report 10 (PB 12623), under Arnold. Robert A.

COLEMAN, PAUL D. and PHILLIPS, RUTH A. Unbalanced to balanced line transformer using flexible cable. (Army Air Forces. Aircraft Radio Laboratories. ARL Engineering Report 385). Off. Pub. Bd., Report, PB 9716. 1945. 33 p. Price: Microfilm-50¢ - Photostat-$3.00
The report describes the design, construction, and tests of a light broad frequency range, unbalanced to balanced line transformer for airborne use, converting a single RG-8/U cable to two RG-8/U coaxial cables used as a balanced line. The unit consists of flexible twinax and coaxial cables wound in a small circle on a panel which in turn slides into a 7 inch x 7 inch x 2½ inch dust cover. Two production units are described covering the ranges 73 to 187 mcs and 113 to 257 mcs.

COMBINED COMMUNICATIONS BOARD. Combined radiotelephone (R/T) procedure. (Publication CCBP 3-2). Off. Pub. Bd., Report, PB 10882. 1945. 30 p. Price: Microfilm-50¢ - Photostat-$2.00
A manual prescribing procedure for combined use in radiotelephone communications. It is divided into chapters as follows: (1) General information, including a standard phonetic alphabet, definitions, pronunciation of numerals, etc.; (2) Component parts of a message - the heading, the text, and the ending; (3) Authorized prowords (a list of prowords with their meanings; (4) calling, answering, and transmitting simple messages; (5) Operating rules; (6) Executive method; and (7) Single call sign method. Each step in the procedure is illustrated with concrete examples of the works to be used.

COREY, C. E. Motor, electric, Dumore no. EP-1197-D, model 1019-263, serial no. X203527. (Army Air Forces. Engineering Division. TSEPL-3-656-484CW). Off. Pub. Bd., Report, PB 10256. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests to determine the amount of radio interference on the Dumore electric motor. Procedure for the tests is outlined, and results of the tests are shown in graphic form (curves showing the extent of the conducted radio interference noise for each direction of rotation of the motor, and curves showing the radiated radio interference noise). The motor failed to meet the radio interference noise requirements.

CURTIS, L. F. Location of anti-tank mines - XIX Hazeltine model 3 locator. (Hazeltine Service Corp. Report 1254 W). Off. Pub. Bd., Report, PB 6567. 1941. 11 p.
Price: Microfilm-50¢ - Photostat-$1.00
This report describes in detail the general features and method of operation of a developmental 1000- cycle anti-tank mine locator made by the Hazeltine Service Corporation for the Corps of Engineers of the U.S. Army under contract with the National Defense Research Committee. Instruction for assembling the units, accompanied by diagram is also given.

DANFORTH, W. E. and others. Back-bombardment of magnetron cathodes. (NDRC, Division 14, Report 309). Off. Pub. Bd., Report, PB 12138. 1944. 103 p. Price: Microfilm - $1.50 - Photostat - $7.00
This report covers investigation and measurements of back-bombardment of magnetron cathodes in order to ascertain what conditions of magnetron operation are most favorable to the utilization of secondary emission from the cathode. The role played by back-bombardment in cathode disintegration was studied simultaneously. The results of measurements are presented in numerous graphs.

DANFORTH, W. E. Magnetron cathode studies. (NDRC Division 14, Report 148). Off. Pub. Bd., Report, PB 12134. 14 p. Price: Microfilm - 50¢ - Photostat - $1.00
This is a progress report covering the two-month period between September 1 and November 1, 1943, of investigations on (1) secondary electron emission, (2) back-bombardment of magnetron cathodes and (3) sparking studies with oxide cathodes. Investigations reported herein were carried on by Bartol Research Foundation of the Franklin Institute. See also PB 12133 and PB 12097.

DANFORTH, W. E. and others: Magnetron cathode studies. (NDRC, Division 14, Report 187). Off. Pub. Bd. Report, PB 12133. 1943. 18 p. Price: Microfilm - 50¢ - Photostat - $2.00
This report presents, in a highly condensed form, investigations on (1) secondary electron emission, (2) decay of thermionic emission from standard cathodes, (3) marking studies with standard cathodes and (4) an experimental study of back bombardment in magnetron tubes. The six-months period between March 1 and September 1, 1943, is covered. This is the Final Report of Supplement II of the present contract which was carried on at the Bartol Research Foundation of the Franklin Institute. See also PB 12097 and PB 12134.

DANFORTH, W. E. and others. Magnetron cathode studies (NDRC Division 14, Report 251). Off. Pub. Bd., Report, PB 12097. 1944. 16 p. Price: Microfilm - 50¢ - Photostat - $2.00
This report covers the period between Nov. 1 1943 and January 1, 1944, of investigations on (1) secondary electron emission, (2) backbombardment of magnetron cathodes and (3) marking studies with oxide cathodes. Investigations reported herein were carried on by the Bartol Research Foundation of the Research Institute. See also PB 12134 and PB 12133.

EMERSON, R. M. The U.S.S. Sennes 3000 megacycle operations. (Mass. Institute of Technology. Laboratory Report R-IV-6) Off. Pub. Bd., Report, PB 12124. 1941. 8 p. Price: Microfilm - 50¢ - Photostat - $1.00
This document describes the observation tests on U.S.S. Sennes radar operations which disclosed that atmospheric conditions were responsible for irregularities in signals from supernormal ranges. Conclusions concerning operational techniques and desirable modifications of the system are presented.

GHIARDI, R. P. Florida tests on Rosebups against SCR-582, SCR-615, MEW. (Mass. Institute of Technology. Radiation Laboratory Report 596). Off. Pub. Bd., Report, PB 11243. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
The report presents data on tests in which BUPS were used as Rosebups (airborne transponder replying directly to microwave radar interrogations). Tests were carried out in cooperation with Army Air Forces Board and Army Air Forces Proving Ground Command. In all cases the range of the ground equipment on a plane equipped with Rosebups was extended to the horizon, and in the case of MEW well beyond.

HANA, T. C. Location of anti-tank mines - XVI tests of locator using amplified frequency variation. (Hazeltine Service Corporation Report 1239W). Off. Pub. Bd., Report, PB 6566. 1941. 18 p. Price: Microfilm-50¢ - Photostat-$2.00
Essentially this locator consists of an oscillator energizing one of two search coils mounted at right angles to each other. The second search coil is not coupled to the first coil. However, the pressure of a metallic body has the effect of coupling the two coils, so that a voltage is included in the second coil. This voltage is amplified and the apparatus is further arranged and equipped so that as a metallic body is approached, it is indicated by a note of increasing pitch in the headphones and by a meter. Descriptions are given of the operation of this apparatus and of the tests made with it. A photograph, a circuit diagram, and graphs are included.

HATHAWAY, CLAUDE M. Development of a special oscillograph for Aberdeen Proving Ground. (OSRD Report 1688). Off. Pub. Bd., Report, PB 11214. 1943. 18 p. Price: Microfilm - 50¢ - Photostat - $2.00
This document covers the progress made in the development of a special recording oscillograph for the Aberdeen Proving Ground, gives complete specifications and analysis of the development work required. The specifications call for a six channel recording oscillograph capable of recording faithfully up to a frequency of 10 kc, taking continuous records up to 6 feet in length which shall be accurate within 2% for a square wave of 2 cycles per second. Appendix gives specifications for multi-element laboratory oscillograph. Drawings, diagrams, and graphs are included.

HAVENS, B. L. and CORSON, D. R. Correlation of ASV-10 equipment with the bombsight. (Mass. Institute of Technology. Radiation Laboratory Report CP-2) Off. Pub. Bd., Report. PB 12123. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00
This report describes the effort to provide the bombardier with a more accurate means to deliver attack under conditions of limited visibility than that offered by the ASV-10 equipment. For this purpose the Norden bombsight in correlation with the equipment is used. The bombardier's tube shows an enlarged portion of the normal type B scan.

HEIM, H. J. and WEBB, R. C. Design and construction of cathode ray oscillograph. Progress Report 3. (OSRD Report 3216). Off. Pub. Bd., Report, PB 11209. 1944. 55 p. Price: Microfilm - $1.00 - Photostat - $4.00
This document refers to a previous report (OSRD Report 1906) in which specifications and requirements for the deflection amplifier were given. It describes all of the circuits of the complete oscillograph and explains them by means of schematic and functional diagrams. The main divisions considered are: Deflection amplifiers; deflection amplifier calibrating equipment; control circuits; block and signal diagrams; power supplies. This work was done at Engineering Experiment Station, Purdue University.

HERGENROTHER, RUDOLF C. Location of anti-tank mines - XII differential electromagnetometer-developmental model. (Hazeltine Service Corporation Report 1236W). Off. Pub. Bd., Report, PB 6564. 1941. 31 p. Price: Microfilm-50¢ - Photostat-$3.00
This report describes a developmental model of a differential electromagnetometer of the type discussed in Hazeltine Service Corporation Report 1207W, which dealt with theory and design considerations. This developmental model is a first model and does not represent the limit of what can be achieved with an instrument of this type. Measurements of the performance of the developmental model and their comparison with the theory developed in Report 1207W are given. A detailed description of the model and the theory of its operation are included. Photographs, a diagram, and graphs are appended.

HOLABIRD SIGNAL DEPOT. Mobile special signal set (amphibious tank set), original model and improvement 1. (Captured Enemy Equipment Report J-6). Off. Pub. Bd., Report, PB 11353. 1945. 77 p. Price: Microfilm $1.00 - Photostat - $6.00
This report presents full description of the original mobile signal set including circuit diagrams, and compares it with the improved model. The Mobile Special Signal Set is a transmitter and receiver built as a single unit. It can transmit and receive frequencies from 4.5 mc to about 13 mc; maximum power output is approximately 25 watts.

JACKSON, BRUCE. Radio noise test on General Electric tachometer commutator. (Army Air Forces. Experimental Engineering Section, EXP-M-54-656-477 G). Off. Pub. Bd., Report, PB 10162. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report on noise level test of tachometer commutator, General Electric commutator assembly Type TJ-21, and recommendation for changes necessary to lower the level. Graph.

KENYON, A. S. British and American phototubes. (Army Air Forces. Experimental Engineering Section, EXP-M-59-676-20-6). Off. Pub. Bd., Report, PB 10038. 1942. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
Sensitivity tests were made on a number of phototubes that were being used or might be used in cameras for night photography. The British Baird tube was found most sensitive, but the best American tubes had superior cathode coatings and could be made more sensitive if the size of the cathode was made larger. Selective grading of tubes by the manufacturer was suggested. Methods and results of the tests are given in text, diagram, tables and graphs.

KURTZ, ALBERT K. and others. The standardization of code speed. (Applied Psychology Panel, NDRC Project M-107, Report 2). (OSRD Report 3490). Off. Pub. Bd., Report. PB 12019. 1944. 37 p. Price: Microfilm - 50¢ - Photostat - $3.00
This report brings together in systematic fashion several ideas and methods for the standardization of the meaning of "words per minute" in radio code instruction and operation. It aims to give the personnel responsible for preparing drill materials and tests some background information and some computations which will prove helpful to them in their attempts to standardize the concept of code speed. The major contribution is a comprehensive presentation of certain ideas and the preparation of working tables which derive from these ideas. A diagram and tables are included.

LASHOF, T. W. Antenna parts and measuring equipment. (Mass. Institute of Technology. Radiation Laboratory Report 472). Off. Pub. Bd., Report. PB 11231. 1943. 22 p. Price: Microfilm - 50¢ - Photostat - $2.00
This catalogue of antenna parts and measuring equipment includes reports, drawings, and general information classified according to wavelength and to application, as follows: Paraboloids, feeds, various types of antennas, radar housings, measuring equipment, general information, antenna reports, systems antennas.

LE BLOND, D. E. Inspection and test of radio set AN/ARQ-8 (XA-1). (Army Air Forces. Engineering Division. TSERR2C-21). Off. Pub. Bd., Report, PB 9705. 1945. 59 p. Price: Microfilm-$1.00 - Photostat-$4.00
Airborne radio communications and radar jammer radio set AN/ARQ-8, its electrical and mechanical characteristics are described. Performance and physical tests, documented by tables, and graphs, proved the set to be satisfactory as standard equipment. Photographs are also given.

MANDEVILLE, C. E. and HARROLD, W.T. A "range only" set for "close-in seeing". (Mass. Institute of Technology. Radiation Laboratory Report 598). Off. Pub. Bd., Report, PB 12095. 1944. 9 p. Price: Microfilm - 50¢ - Photostat - $1.00 -
This report describes the work done to meet the need for a compact portable radar set for seeing objects as near as 100 yards to the antenna. For this purpose a lighthouse transmitter-receiver unit has been modified so that signals from objects 75 yards distant were well resolved from the main bang. Some operational observations and a discussion accompanied by photographs are included.

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY. RADIATION LABORATORY. Special report for the cathode-ray tube section. (Mass. Institute of Technology. Radiation Laboratory Report 1S, Section VI). Off. Pub. Bd., Report, PB 8072. 1941. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Brief summary of results of persistance calculations of phosphors. Phosphors can be divided into two general classes ("monomolecular" and "bimolecular") depending on their decay characteristics. The most desirable decay characteristic is one which gives roughly constant intensity for five to ten seconds and then decreases suddenly.

MEIER, ALLEN S., BENNETT, FREDERICK D., and COLEMAN, PAUL D. The design of broadband antenna systems. (Army Air Forces. Aircraft Radio Laboratories. ARL Engineering Report 387). Off. Pub. Bd., Report, PB 9715. 1945. 78 p. Price: Microfilm-$1.00 - Photostat-$6.00
The report contains a detailed description of a complete technique for the development of broad band aircraft antennas at frequencies from 10 to 100 mc. The three sections into which it is divided deal with impedance measurement, impedance matching, and the broad band fan antenna as modified for aircraft use on the bases of results of the investigation. All three parts describe graphical and analytical methods for making the necessary adaptation and corrections in the design. Five appendices contain numerous graphs and some photographs.

MEIER, ALLEN S. 20-27 mc. broad-band antenna on AT-18 aircraft. (War Department. Aircraft Radio Laboratory. ARL Engineering Report 346). Off. Pub. Bd., Report, PB 9709. 1943. 18 p. Price: Microfilm-50¢ - Photostat-$2.00
Development of an antenna suitable for use with British "Jostle" jamming equipment on AT-18 aircraft, its construction and tests of performance are described. Photographs, diagrams, and drawings are included.

MILNE, H. A., and others. Increasing stability of operation of 4J31-35 magnetrons in the AN/CPS-1 system. (Mass. Institute of Technology. Radiation Laboratory Report 621). Off. Pub. Bd., Report, PB 11244. 1945. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
Laboratory studies showed that the 4J31-35 magnetrons could not be operated at the required power level (1.5 MW input) in the conventional line modulator circuit proposed for the AN/CPS-1 system. This report gives an account of experimental determination of a suitable combination of modulator "patch circuits" to increase the magnetron operational stability.

TK 6575.459

NAVAL AIR TECHNICAL TRAINING CENTER, CORPUS CHRISTI, TEXAS. Fundamentals of radar. (NAVAER 08-5S-108). Off. Pub. Bd., Report, PB 12611. 1943. 229 p. Price: Microfilm - $2.50 - Photostat - $16.00
This material has been compiled by the instructional staff of the Radar Fundamentals Section. Its purpose is to furnish a source of information to which the student may turn in preparation for the specific lectures presented and to provide a ready reference to basic circuit analysis as he progresses through the course of training. In the preparation of the articles, effort has been put forth toward the development of a standard nomenclature based on the terminology exercised in Appendices A and B. The data tabulated in Appendix C is presented as a further effort to impress the student with the scope of application of the circuits he is studying. Appendix D embodies supplementary material included to assist in effecting the transition from the study of basic radar to that of specific types of equipment. Appendix E lists the recently adopted Army-Navy nomenclature. Diagrams and tables are included.

RAMSEY, W. E. and SWARM, W. F. G. A general survey of sparking phenomena in high vacuum thermionic tubes. (NDRC Division 14, Report 516). Off. Pub. Bd., Report, PB 12128. 1945. 91 p. Price: Microfilm - $1.00 Photostat - $7.00
This report describes investigations aimed at disclosing the roles played by cathode and anode in triggering sparks in high vacuum thermionic tubes. Pulse duration, from one to several thousand microseconds, were employed and some consideration is given to sparks completed in times short compared to a microsecond. The work is mostly confined to BaSr oxide type and a new thoria oxide type of cathodes. Diagrams and graphs are given. These investigations were carried on at the Bartol Research Foundation of the Franklin Institute.

REDHEFFER, R. M. and WINKLER, E. D. The measurement of dielectric constants in the one-centimeter band. Radome Bulletin 15. (Mass. Institute of Technology. Radiation Laboratory Report 483-15.) Off. Pub. Bd., Report, PB 11233. 1945. 53 p. Price: Microfilm - $1.00 - Photostat - $4.00
This report discusses the development of a new method of measuring the phase on transmission and was introduced in order to eliminate difficulties in dielectric measurement in the one-centimeter band. It gives two methods involving direct measurement of the sample wavelength, and one new method for measurement of dielectric losses.

STEWART, CHANDLER, JR., Determination of radio frequency resistance of wires. (Army Air Forces. Aircraft Radio Laboratories. ARL Engineering Report 378). Off. Pub. Bd., Report, PB 9714. 1944. 32 p. Price: Microfilm-50¢ - Photostat-$3.00
This report describes the methods and results of investigations aiming at the development of a method for measuring radio frequency resistance of wires and evaluation of certain specific wire types on this basis. A method employing a transmission line comprised of a specimen strung down the center of a metal tube, and a standard Q-meter was developed which appears to be more reliable than the use of coils. Photographs, diagrams, and charts.

STEWART, CHANDLER, JR. The "S Function" method of measuring attenuation of coaxial radio frequency cable. (Army Air Forces. Aircraft Radio Laboratories. Memorandum Report 183). Off. Pub. Bd., Report, PB 9719. 1944. 26 p. Price: Microfilm-50¢ - Photostat-$2.00
Proposal for the adoption of a method of measuring attenuation of short samples of coaxial radio-frequency cable at frequencies in the order of 10 megacycles, known as the "S-Function", based on calculation and results of tests. Advantages of the method are set forth. Photographs, diagrams and graphs.

SUDMAN, I. Overinterrogation control of microwave beacons. (Mass. Institute of Technology. Radiation Laboratory Report 477). Off. Pub Bd., Report, PB 11232. 1943. 21 p. Price: Microfilm - 50¢ - Photostat - $1.00
This paper discusses two electronic control circuits which limit overinterrogation of beacons. Both schemes ration the number of replies when the beacon becomes overinterrogated. Thus, a given interrogating system does not receive a reply for every interrogating pulse when the beacon is overinterrogated. Neither scheme discriminates against weak interrogating signals, since the control circuits operate on pulses which are independent of the strength of the interrogating pulses.

THICKENS, R. W. SG-1 antenna Mk-2. (Mass. Institute of Technology. Radiation Laboratory Report 639). Off. Pub. Bd., Report, PB 12099. 1945. 20 p. Price: Microfilm - 50¢ - Photostat - $2.00
This report covers the work on the shipborne SG-1 antenna Mk-1 to reduce the objectionably high level of the radiation off the main lobe which was causing near targets to appear on the PPI as rings. As a result of this work of redesigning, the antenna Mk-2 was developed which eliminates the Mk-1 shortcoming.

U.S. ARMY. SIGNAL CORPS. Suppression applied to engine models HP-326 and HP-351. (The Buda Company, Harvey, Illinois). (Engineering Memorandum D-24-E-P-46). Off. Pub. Bd., Report, PB 9611. 1945. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
Radiated interference in the use of these engines may be suppressed, over a frequency range of 0.55 through 156.0 megacycles, at a distance of 100 feet from the engine, when the application of suppressors, as indicated in this report, is made. Eleven sketches illustrate the applications necessary.

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine models 140 and 145 series (Waukesha Motor Company, Waukesha, Wisconsin). (Engineering Memorandum D-345-E-P-45). Off. Pub. Bd., Report, PB 15224. 1945. 19 p. Price: Microfilm-50¢ - Photostat-$2.00
This memorandum report, and those like it immediately following, are part of a series sent out by the Power Unit Suppression Branch of the Signal Corps Engineering Laboratories. They give methods for suppressing radiated interference from various engine types and models. This interference is of an electrical and radio nature, and can be controlled by the use of shielding, bonding, and capacitors on the various parts of the electrical system such as spark plugs, ignition system, battery system and generator assembly. All of these engines and their associated electrical components are effectively suppressed for radiated interference over the frequency range of 0.55 through 156.0 megacycles at a distance of 100 feet from the engines when the suppression components are applied as outlined and sketched in this and the following reports.

U. S. ARMY. SIGNAL CORPS. Suppression applied to B series engines (Continental Motors Corporation, Muskegon, Michigan), including models B-371, PB 371, B-406, PB 406, B-427, and PB 427. (Engineering Memorandum D-374-E-P-45). Off. Pub. Bd., Report, PB 15225. 1945. 25 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine models EUA, EE, and 165-4A, (Minneapolis-Moline Power Implement Company, Minneapolis, Minnesota). (Engineering Memorandum D-30-E-P-46). Off. Pub. Bd., Report, PB 15228. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engines, RX series (Models RX1 and RX0), (Le Roi Company, Milwaukee, Wisconsin). (Engineering Memorandum D-333-E-P-45). Off. Pub. Bd., Report, PB 15230. 1945. 14 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine models D318, D382, and D471 (Le Roi Company, Milwaukee, Wisconsin). (Engineering Memorandum D-332-E-P-45). Off. Pub. Bd., Report, PB 15231. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engines, models D176, D201, and D226 (Le Roi Company, Milwaukee, Wisconsin). (Engineering Memorandum D-331-E-P-45). Off. Pub. Bd., Report, PB 15232. 1945. 19 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Application and testing of suppression as applied to experimental-pilot-model engine, model X-159, 500 series, manufactured by the Johnson Motors Division of the Outboard Marine and Manufacturing Company, Waukegan, Illinois. (Engineering Memorandum D-327-E-P-45). Off. Pub. Bd., Report, PB 15233. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to water pumping skid unit, model 7-112 (Chrysler Corporation, Detroit, Michigan). (Engineering Memorandum D-368-E-P-45). Off. Pub. Bd., Report, PB 15234. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Application and testing of suppression as applied to experimental pilot model engine, models VD-4, VD-41, VE-4, VE-41, VP-4, and VP-41, manufactured by Wisconsin Motor Corporation, Milwaukee, Wisconsin. (Engineering Memorandum D-363-E-P-45). Off. Pub. Bd., Report, PB 15235. 1945. 9 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to outboard motor, model POLR-15, (Johnson Motors Division, Outboard Marine and Manufacturing Company, Waukegan, Illinois). (Engineering Memorandum D-363-E-P-45). Off. Pub. Bd., Report, PB 15236. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression as applied to experimental-pilot model engine JO-4140, Contract No. W-47-013-(MSP)-197, Order No. 23-2046, manufactured by the Continental Motors Corporation, Muskegon, Michigan. (Engineering Memorandum D-301-E-P-45). Off. Pub. Bd., Report, PB 15239. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Application and testing of suppression as applied to experimental pilot model outboard motor "Zephyr", model 4378, manufactured by Evinrude Motors Division, Outboard Marine and Manufacturing Company, Milwaukee, Wisconsin. (Engineering Memorandum D-360-E-P-45). Off. Pub. Bd., Report, PB 15240. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to R-series engines (Continental Motors Corporation, Muskegon, Michigan). (Engineering Memorandum D-339-E-P-45). Off. Pub. Bd., Report, PB 15241. 1945. 24 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine, model "S" series (SE and SI). (J.I. Case Company, Racine, Wisconsin). (Engineering Memorandum D-340-E-P-45). Off. Pub. Bd., Report, PB 15242. 1945. 15 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine, model "D" series (DE and DI) (J.I. Case Company, Racine, Wisconsin). (Engineering Memorandum D-341-E-P-45). Off. Pub. Bd., Report, PB 15243. 1945. 14 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine, X series (models XW-7, XP-5, and XP-7), (Le Roi Company, Milwaukee, Wisconsin). Off. Pub. Bd., Report, PB 15248. 1945. 16 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Application and testing suppression as applied to experimental pilot model engine, model LA series (LAE and LAI), manufactured by J.I. Case Company, Racine, Wisconsin. (Engineering Memorandum D-336-E-P-45). Off. Pub. Bd., Report, PB 15249. 1945. 15 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Application and testing of suppression as applied to experimental-pilot model outboard motor "Army Storm", model 8008, manufactured by the Evinrude Motors Division, Outboard Marine and Manufacturing Company, Milwaukee, Wisconsin. (Engineering Memorandum D-338-E-P-45). Off. Pub. Bd., Report, PB 15250. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to M series engines (Continental Motors Corporation, Muskegon, Michigan). (Engineering Memorandum D-335-E-P-45). Off. Pub. Bd., Report, PB 15251. 1945. 26 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Application and testing of suppression as applied to experimental-pilot model outboard motor "Light Four", model 4383, manufactured by the Evinrude Motors Division, Outboard Marine and Manufacturing Company, Milwaukee, Wisconsin. (Engineering Memorandum D-337-E-P-45). Off. Pub. Bd., Report, PB 15252. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine models R602 and R602P (Continental Motors Corporation, Muskegon, Michigan). (Engineering Memorandum D-347-E-P-45). Off. Pub. Bd., Report, PB 15253. 1945. 18 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine, model D 140 (Le Roi Company, Milwaukee, Wisconsin). (Engineering Memorandum D-352-E-P-45). Off. Pub. Bd., Report, PB 15254. 1945. 16 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Application and testing of suppression as applied to experimental pilot model engines, models AP-4 and AM-4, manufactured by Wisconsin Motor Corporation, Milwaukee, Wisconsin. (Engineering Memorandum D-358-E-P-45). Off. Pub. Bd., Report, PB 15255. 1945. 9 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Application and testing of suppression as applied to experimental-pilot model outboard motor "Surf Landing Boat", model 8012, manufactured by the Evinrude Motors Division, Outboard Marine and Manufacturing Company, Milwaukee, Wisconsin. (Engineering Memorandum D-359-E-P-45). Off. Pub. Bd., Report, PB 15256. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to 130 and VRZ series engines (Waukesha Motor Company, Waukesha, Wisconsin). Off. Pub. Bd., Report, PB 9616. 1945. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
This memorandum report, and those like it immediately following, are part of a series sent out by the Power Unit Suppression Branch of the Signal Corps Engineering Laboratories. They give methods for suppressing radiated interference from various engine types and models. The interference is of an electrical and radio nature, and can be controlled by the use of shielding, bonding, and capacitors on the various parts of the electrical system such as spark plugs, ignition system, battery system and generator assembly. All of these engines and their associated electrical components are effectively suppressed for radiated interference over the frequency range of 0.55 through 156.0 megacycles at a distance of 100 feet from the engines when the suppression components are applied as outlined and sketched in this and the following reports.

U. S. ARMY. SIGNAL CORPS. Application and testing of suppression as applied to experimental-pilot model engines, models AA, AB, ABS, AK, AKS, manufactured by Wisconsin Motor Corporation, Milwaukee, Wisconsin. (Engineering Memorandum D-308-E-P-45). Off. Pub. Bd., Report, PB 9619. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Radio-interference suppression applied to experimental-pilot model engines, models N, NP, NR-6, WMB, and PD-1-A, manufactured by Briggs and Stratton Corporation, Milwaukee, Wisconsin. (Engineering Memorandum D-306-E-P-45). Off. Pub. Bd., Report, PB 9620. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to D series engines (Caterpillar Tractor Company, Peoria, Illinois). (Engineering Memorandum D-58-E-P-46). Off. Pub. Bd., Report, PB 9621. 1945. 16 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to industrial engine unit, model 6055 (Detroit Diesel Division, General Motors Corporation, Detroit, Michigan). (Engineering Memorandum D-68-E-P-46). Off. Pub. Bd., Report, PB 9622. 1945. 12 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine, model UD-14 (International Harvester Company, Chicago, Illinois). (Engineering Memorandum D-69-E-P-46). Off. Pub. Bd., Report, PB 9623. 1945. 13 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to engine, model IND-12-70 (Chrysler Corporation, Industrial Engine Division, Detroit, Michigan). (Engineering Memorandum D-72-E-P-46). Off. Pub. Bd., Report, PB 9624. 1945. 16 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to 15-KW, engine-generator unit (Model 2016), (Detroit Diesel Division, General Motors Corporation, Detroit, Michigan). (Engineering Memorandum D-70-E-P-45). Off. Pub. Bd., Report, PB 9617. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
This unit, and those immediately following it in this bibliography (PB 9618, PB 15227, PB 15229), is satisfactorily suppressed for radiated and conducted interference over the frequency range of 0.55 through 145.0 megacycles at a distance of 25 feet from the unit when equipped with the suppression system outlined and sketched in the reports as listed. Suppression of electrical and radio interference is accomplished by the use of capacitors, bonding, and shielding on the various electrical parts such as charging system, ignition system, regulators, battery system, and control panel. Sketches and diagrams illustrate suppressor applications.

U. S. ARMY. SIGNAL CORPS. Suppression applied to 50-KW engine-generator unit (Clark Supply Company, Milwaukee, Wisconsin). (Engineering Memorandum D-15-E-P-46). Off. Pub. Bd., Report, PB 9618. 1945. 21 p. Price: Microfilm-50¢ - Photostat-$2.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to 10-KW engine-generator unit (JWCA-10M), (D.W. Onan and Sons, Minneapolis, Minnesota) for use with Hoffman laundry unit. (Engineering Memorandum D-43-E-P-46). Off. Pub. Bd., Report, PB 15227. 1945. 12 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. ARMY. SIGNAL CORPS. Suppression applied to 50-KW engine-generator unit (PE-215-A), (Clark Supply Company, Milwaukee, Wisconsin). (Engineering Memorandum D-41-E-P-46). Off. Pub. Bd., Report, PB 15229. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00

U. S. CHIEF OF ORDNANCE. Radios installed in U. S. Army half-track vehicles. Export packing procedure. (O. P. C. Instructions 91.) Off. Pub. Bd., Report, PB11164. 1944. 5 p. Price: Microfilm - 50¢ - Photostat - $1.00
This report consists of four photos illustrating the method of packing for export radios installed on U. S. Army half-track vehicles. Each photo has an explanatory legend. Prepared by Packaging Section - Operations Planning Branch, Tank-Automotive Center, Detroit, Michigan.

U. S. CHIEF OF ORDNANCE. Radios installed in war aid half-track vehicles. Export packing procedure. (O.P.C. Instructions 92) Off. Pub. Bd., Report, PB 11163. 1944. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
This report contains general instructions for packing for export, radios installed on war and half-track vehicles. Certain stages of packing are shown in photographs. Prepared by Packaging Section - Operations Planning Branch, Tank-Automotive Center, Detroit, Michigan.

WHEELER, H. A. Location of anti-tank mines - XVII Interpretation of tests on scale model. (Hazeltine Service Corp. Report 1241 W). Off. Pub. Bd., Report, PB 6568. 1941. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
A series of tests were made on a scale model to verify some of the theoretically developed formulas for the response to a metal object or to a surface of conductive material. See PB 6563 for description of scale model for determining the effects of conducting bodies and conducting media in induction fields. Description and interpretation of the tests,

are given. Considering the several departures from ideal conditions, the small values of the coefficient of response, and the many factors involved in its measurement, the agreement with the theoretical formulas was good. Diagram and graphs are included. For description of scale model, see PB 6563, under Blanchard, D.E.

WHITE, C. B. and others. The design and construction of a multi-channel recording cathode ray oscillograph Progress Report. (OSRD Report 3322). Off. Pub. Bd., Report, PB 11212. 1944. 56 p. Price: Microfilm - $1.00 - Photostat - $4.00
This report describes work on the problem of supplying a multi-channel recording cathode ray oscillograph capable of measuring and recording signals derived from electrical pickups of the type involved in ballistic engineering. The unit consists of four separate channels, the four tubes mounted on a single panel and photographed by a single lense. All main and auxiliary circuits are fully described as well as the engineering and construction work done on the problem.

Generating, Transmission and Distribution Equipment

German

JOINT INTELLIGENCE OBJECTIVES AGENCY. WAR UTILITIES SUB-COMMITTEE, TECHNICAL INDUSTRIAL INTELLIGENCE COMMITTEE. The power industry in Germany. (FIAT Final Report 95). Off. Pub. Bd., Report, PB 11197. 1945. 427 p. Price: Microfilm-$4.50 - Photostat-$29.00
This document is a report by an American team of investigators sent to Germany by the Utilities Sub-Committee, Office of War Utilities, War Production Board, Technical Intelligence Committee, to investigate the German power industry with reference to new developments that may have been made since the start of the war, and to obtain information of the effectiveness and extent of air raid attacks, air raid protection devices, etc. The information is grouped under these headings: Steam generating power plants, hydro-electric power plants, substations and electrical transmission systems, electrical equipment manufacturers and a summary report on German power plant and electrical transmission system. Photographs and diagrams are given. Included as exhibits are: H. Lent's article "Experience with Benson boilers, Scholven"; Otto Engler's article, "The design of high-pressure boilers" issued by Vereinigte Kesselwerke A. G., Düsseldorf; flow diagrams of power equipment; and a complete list of exhibits.

Japanese

MATTESON, W. J. Evaluation report on a switchboard for searchlight generator Serial No. 350218-8-2, Japanese, (Army Engineer Corps. Engineer Board Rep. 196). Off. Pub. Bd., Report, PB 9663. 1945. 6 p. Price: Microfilm-50¢ Photostat-$1.00
The report contains a brief description of the apparatus and five photographs. Equipment is crude in comparison to U.S. Army 60-inch searchlight power plant switchboards.

U. S. ARMY. ENGINEER BOARD. Evaluation report, Japanese magneto, serial nos. 9539 and 8537. (Register, 286 and 282). Off. Pub. Bd., Report, PB 9647. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The subject Japanese magnetos are of the rotating-armature type in that the field structure or magnet is stationary and the rotating armature contains the windings in which the high-tension electromotive impulses are induced. Both magnetos have impulse couplings of the spring and steel ball type. They are similar to magnetos used on U. S. automotive and stationary gasoline engines, and contain no feature or principle that is not used on U. S. manufactured magnetos. Photographs are included.

U. S. ARMY. ENGINEER BOARD. Evaluation report on captured Japanese dynamotor. (Register, 287). Off. Pub. Bd., Report, PB 9648. 1945. 4 p. Price: Microfilm-50¢ - Photostat - $1.00
Description of Japanese dynamotor with no nameplate attached. It weighs 17 pounds, and is 10 5/8 inches long, 5 3/4 inches wide, and 5 5/8 inches high. The use of electrically separated rotor windings for input and output is unusual. Included are photographs and a schematic wiring diagram with description of the circuits and test results. It is recommended by the Technical Staff of the Engineer Board that no further investigation be made on this equipment.

United States

COLOMBO, C. C. Eclipse series 45 starter. (Army Air Forces. Engineering Division. ENG-M-54-656-666). Off. Pub. Bd., Report, PB 9875. 1943. 3 p. Price: Microfilm - 50¢ - Photostat - $1.00
A series of tests on the subject starter revealed certain flaws which when corrected by the manufacturer brought it up to AAF specification standards. Tests were run for endurance, torque, cold and slam. An electrical diagram is included.

COREY, C.E. Motor, electric, Eclipse no. 1073 for P-17 airplanes. (Army Air Forces. Engineering Division. TSEPL-3-656-484-CL). Off. Pub. Bd., Report, PB 10254. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Description of tests to determine the cause of "hesitation and jumping" action in subject landing gear actuator, during periods of extension and retraction. The usual tests and checks did not clearly and definitely locate the cause of this action. By means of the tests described in this report it was determined that the "hesitation and jumping" was produced by the dog clutch. It is recommended that the Aircraft Laboratory continue the investigation with the objective of improvement of the present design clutch, or provide a new design.

DONOVET, B. Motor, direct current, F.L. Jacobs Company, type D 26410, serial no. P44-31627, unit 1007. (Army Air Forces. Engineering Division. TSEPL-3-656-484BZ). Off. Pub. Bd., Report, PB 10268. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of Air Technical Service Command tests to determine this motor's suitability for use as a cowl flap actuator motor on the B-24 airplane. From the calibration of the subject motor it is found that at 26 volts and rated current: 1. The output is .20 HP. CCW rotation and .19HP CW rotation. 2. The efficiency is 62.5% CCW rotation and 55% CW rotation. The speed torque characteristic indicates that the motor is not suitable for the application. Test results are given in tabular and graphic form.

LUSK, R. J. Ventilation of voltage regulator compartments, January 4, 1943. (Army Air Forces. Engineering Division ENG-M-54-656-290-000). Off. Pub. Bd., Report, PB 10138. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Results of tests run to determine a more effective method of ventilating voltage regulator compartments to facilitate proper operation of the voltage regulator. Blast cooling as formerly recommended, demonstrated that it was impractical to obtain an equal flow of air from each jet in multi-generator systems. The portion adjacent to the focus of the jet was cooled, while other parts remain hot. The new cooling system designed for the B-17 and flight tested, employs 3 baffles and 16 and 48, equally spaced holes. These regulators operate at more nearly the same temperatures and the gradient existing between parts of the regulator unit is reduced.

MORHEAD, M. M. Synchronous rectifiers. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-534). Off. Pub. Bd., Report, PB 10234. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a report of a discussion with engineers of the Jack-Heintz, Inc., of Bedford, Ohio, regarding a rectifier to consist of a synchronous converter as motor-generator set and which was proposed as a possible substitute for the dry disk rectifier in rectified alternating current power systems. It was concluded that the development of an 800 ampere synchronous rectifier appeared to be entirely practicable and that this type of rectifier offered several advantages over the dry disk type with regard to efficiency, weight, size, and dependability.

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PHILLIPS, R. S. Servo mechanisms. (Mass. Institute of Technology. Radiation Laboratory Report 81-6). Off. Pub. Bd., Report, PB 8056. 1943. 33 p. Price: Microfilm-50¢ - Photostat-$3.00
In this report, that servo mechanism is considered best which minimizes the mean square error. A method is presented by which the mean square error can be evaluated without solving the characteristic equation of the differential equation. This gives an expression of the mean square error in terms of the parameters of the system and in terms of the input. For a particular kind of input these parameters can be chosen to minimize the mean square error. A statement of the problem and the method are presented in Section 1. Two examples of the results are included. Section 2 is a manual by which the mean square error can be calculated for any system and for any type of input. Section 3 consists of a table of integrals which gives the mean square error directly for any reasonably complicated system.

TOLENTINO, J. G. Motor, Delco Products model EX-90052, for operation from 110 volts AC. (Army Air Forces. Air Technical Service Command. TSEPL-3-656-484ER). Off. Pub. Bd., Report, PB 10269. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests conducted on an electric motor, the speed of which can be varied from 500 to 2250 r.p.m. This motor is rated 1/10 horsepower, is shunt wound, and is operable directly from 45 volts D.C. A satisfactory variation in speed from 500 to 2250 r.p.m. at a constant torque of 3.75 ounce feet is obtainable. The use of a rectifier made by Federal Telephone and Radio Corporation, as a power supply for the subject motor, is satisfactory for 110 AC operation. Report contains an armature circuit diagram, and a graph showing the resistance-speed relation.

TUCKER, L.M. Chicago Pneumatic Tool Company motor, 28 volts DC, 2300 RPM, 1/8 H.P., part no. BD-8500C, serial no. EX105. (Army Air Forces. Engineering Division. TSEPL-3-656-484DB) Off. Pub. Bd., Report, PB 10260. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests of the motor for its compliance with the radio noise requirements of Specification AN-M-10. Procedure and test data are given for conducted and radiated radio noise measurements. Radio noise values of the motor are close enough to the specified maximum values to be acceptable.

TUCKER, L.M. Fuel value actuator, John Oster Mfg. Company, 28 volt D.C. motor, serial no. 0554. (Army Air Forces. Engineering Division. TSEPL-3-656-484DA). Off. Pub. Bd., Report, PB 10258. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests of subject motor for its conformance with the radio noise and explosion requirements of Specification AN-M-10. Tests are described and tabulated data given. The radio interference, measured in microvolts is in excess of that allowed in Specification AN-M-10 for both conducted and radiated noise. The motor complies with the explosion requirements of Specification AN-M-10.

TUCKER, L. M. Motor, fuel valve actuator, Bendix Aviation (Pacific Division) model LM-108E24, 28 volt D.C. (Army Air Forces. Engineering Division. TSEPL-3-656-484CA). Off. Pub. Bd., Report, PB 10267. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of results of Equipment Laboratory tests conducted on subject motor to determine the compliance with explosion-resistance requirements of Specification AN-M-10. Details of the test procedure and tabulated test results are given. It is recommended that this motor be considered to meet explosion-proof specification requirements.

TUCKER, L.M. Motor, 24 volts D.C., 2.0 amperes, 4000 RPM, continuous duty, Electric Motor Corporation. (Army Air Forces. Engineering Division. TSEPL-3-656-484DQ). Off. Pub. Bd., Report, PB 10259. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests to determine the conformance of this motor with the requirements of Specification AN-M-10. The motor is used to operate a defroster fan manufactured by the Fulton Company for the Glenn L. Martin Company. Physical characteristics, test procedures and results are given. The motor satisfactorily passed the following tests: Vibration, life, humidity, explosion, sand and dust, overspeed, dielectric strength, efficiency, heat, and starting current; but failed in the following tests: Radio noise interference, salt spray and moist fungus. High altitude and low temperature tests were not made due to motor failure. No thermal protection was incorporated in the motor. It was recommended that the motor be modified so as to eliminate excessive radio noise interference, and that the plating of the material be improved so as to resist corrosion resulting from salt spray and moist fungus, and that modified samples be submitted for further tests.

YOUNG, R. B. Conference regarding Army Air Forces type D-3 accessory power plant. (Army Air Forces. Engineering Division. ENG-M-54-656-509A). Off. Pub. Bd., Report, PB 10242. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
The Crosley D-3 power plant consists of 2-cylinder, 4 cycle, horizontal exposed engine developing about 20 hp. continuously at 4000 r.p.m. and driving an Army Air Forces Type R-1 generator at 6000 r.p.m. Certain changes in construction are recommended.

TUCKER, L.M. White-Rodgers Electric Company 24 volt DC motor, 0.4 ampere part no. 6203x-13, serial no.-none. (Army Air Forces. Engineering Division. TSEPL-3-656-484 CW). Off. Pub. Bd., Report, PB 10257. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of radio noise tests conducted on subject motor in compliance with the requirements of Specification AN-M-10. Conducted and radiated radio noise measurements were made, and results are shown in tabular form. It was concluded that the motor has a high conducted noise, and that bonding strips are needed between the cover and the case of the motor. It is recommended that further research be conducted on the motor.

TUCKER, L.M. U.S. Time Products, 24 volts, D.C., cowl flap actuator motor, part no. ZJ-1016, Model CC1057E. (Army Air Forces. Engineering Division. TSEPL-3-656-484CT). Off. Pub. Bd., Report, PB 10255. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of results of tests on U. S. Time Products Company motor to determine its compliance with endurance requirements of Specification AN-M-10. The endurance test data is given. After completing 2290 cycles or seventy-six operating hours, subject motor was found to be in good condition. The commutator and brushes showed almost no wear.

Miscellaneous

German

GRAVES, HERBERT C., JR. Survey of low voltage, air circuit breakers practice, Germany. (FIAT Final Report 512) Off. Pub. Bd., Report, PB 11195. 1945. 30 p. Price: Microfilm - 50¢ - Photostat - $2.00
Author discusses, on the basis of his investigations in Germany, the German low voltage, air circuit breaker practice, compares it with American practice and offers reasons for differences between the respective German and American equipment. German devices are described in some detail and a list of sample devices collected throughout Germany is given. Opinion is expressed that American equipment lags in some respects behind German equipment and that American industry could well take advantage of some German designs. U.S. Patent office brief on the Haag electric switch is enclosed.

MATTESON, W. J. Evaluation report on captured German wire, metallic, insulated metallic covered. (Army Engineer Corps. Engineer Board Rep. 2106). Off. Pub. Bd., Report, PB 11454. 1944. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
This is an evaluation report on the above named captured German wire. This was an electrical conductor of the stranded, rubber covered, single conductor, flexible metallic shielded type. The conductor contains 30 strands of copper, each measuring 0.0102 inches in diameter. The total area of all strands is 3110.91 circular mils which corresponds closely to No. 15 of the American Wire gage for copper wire. Brief report of tests is included.

Japanese

MATTESON, W. J. Evaluation report on repair kit for searchlight, Serial No. 52771 - Japanese, and spare parts kit for 90 cm searchlight, - Japanese. (Army Engineer Corps. Engineer Board Rep. 232 and 250). Off. Pub. Bd., Report, PB 9664. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Both devices are briefly described and shown in two photographs.

U. S. ARMY. ENGINEER BOARD. Evaluation report on captured Japanese overcurrent protective relay. (Register 297). Off. Pub. Bd., Report, PB 9655. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This relay was selected from two boxes of damaged switchboard equipment, as the only item considered worthy of evaluation. It is designed to trip the circuit breaker in a power circuit if the current in the power circuit exceeds a predetermined value. The current which causes tripping can be varied over a range of from 4 to 10 amperes by inserting a screw in the appropriate current top. A current transformer is used in the power circuit to supply a tripping current within the range of the relay. No desirable unusual features were evident nor were novel uses made of materials in the manufacture of the Japanese relay. Report includes photographs.

U. S. ARMY. ENGINEER BOARD. Evaluation report on a kit, remote control parts for 90-cm searchlight, serial no. 1231, Japanese. (Register 278). Off. Pub. Bd., Report, PB 9651. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
The captured Japanese kit consists of rotary converter, synchronous transmitter device, 15-foot length of 4-conductor cable with plug and receptacle, and small metal chest containing telescoping pointer and miscellaneous spare parts, all of which are packed in a steel carrying chest, total weight being 113 pounds. This equipment cannot be used with U.S. Army searchlight equipment and as a component of a control system is of no value to the U.S. Army. Photographs are included.

U. S. ARMY. ENGINEER BOARD. Evaluation report on searchlight, 150-cm, mobile (incomplete), Japanese. (Register 298) Off. Pub. Bd., Report, PB 9654. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This captured mobile searchlight was received without mirror, rear cover, front door glass, lamp mechanism control, shutter control, and many other miscellaneous parts. It is 8 feet high, 7 feet 4 inches long, and 6 feet 6 inches wide, and weighs 1,793 pounds. It is of no value from a research standpoint because of its incompleteness. Photographs are included.

United States

BARDEN, W. A. Electrical fittings, plugs, receptacles and relays. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-526). Off. Pub. Bd., Report, PB 10228. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Brief report of a conference with engineers of the Pyle-National Company and of the Guardian Electric and Manufacturing Company regarding electrical fittings, plugs, receptacles and relays. It was thought that the former company might be interested in producing AN connectors, but it was found that they were not equipped for quantity production of this item. Tests showed that the contact material used by the Guardian Electric and Manufacturing Company on some of their relays should be improved.

BARDEN, W. A. Trip to Boeing Airplane Company, Wichita, Kansas, 24 June 1943, to investigate difficulty with Amphenol connectors. (Army Air Forces. Engineering Division. ENG-54-656-788). Off. Pub. Bd., Report, PB 9832. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The connectors used did not have sufficient rigidity in the socket contacts, causing poor connections for electrical equipment. Contacts were fitted with a reinforcing clip which was an integral part of the fixture and satisfactory results were achieved.

DAVIS, R. K. Asphalt impregnated fabric covered cable and reclaimed rubber "T" connectors - Belden Mfg. Company. (Army Air Forces. Experimental Engineering Section, EXP-M-54-656-528). Off. Pub. Bd., Report, PB 10229. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of examination and tests conducted on samples of subject type cable and connectors to be used in the type B-2 field lighting sets, Specification no. 32273. Ultimate tensile strength tests, shock test and abrasion test were made. The subject type cable and connectors manufactured by the Belden Mfg. Company, Chicago, Illinois, meet the requirements of Specification no. 32273 and Specification no. 12-6.

DAVIS, R. K. Asphalt impregnated fabric covered cable and reclaimed rubber "T" connectors - General Electric Company. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-508). Off. Pub. Bd., Report, PB 10239. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of examinations and tests conducted on samples of asphalt impregnated covered cable and molded reclaimed rubber "T" connectors to be used in the Type B-2 field lighting sets, in place of the rubber covered cable which was being used. It was concluded that the subject type cable and connectors manufactured by the General Electric Company, Bridgeport, Connecticut, exceeded the requirements of Specification No. 12-6 and that the cable with the rayon filler was more satisfactory than that with the cotton filler.

DAVIS, R. K. Battery operated flashing obstruction marker. (Army Air Forces. Engineering Division. ENG-54-656-748). Off. Pub. Bd., Report, PB 9866. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
Tests showed that the marker failed to operate satisfactorily when conditions were critical. No procurement was authorized.

DAVIS, R. K. Battery operated portable marker lights. (Army Air Forces. Engineering Division. ENG-54-656-747). Off. Pub. Bd., Report, PB 9865. 1943. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Photometric tests showed the subject lights gave 15% beam candlepower output of those in use with the AAF. Large decreases in voltage and candlepower after continuous use for eight hours also made it unsatisfactory for acceptance. The manufacturer was Pacific Signal Co. Tests results are plotted and included in the report.

DAVIS, R. K. Color filter for type B-2 field lighting set. (Army Air Forces. Experimental Engineering Section EXP-M-54-656-490). Off. Pub. Bd., Report, PB 10264. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of results of heat tests conducted upon this filter, manufactured by the American Gas Accumulator Company of Elizabeth, New Jersey. Used in a marker light from B-2 portable field lighting set with a 10 watt, 105 volt lamp, and covered with a blackout hood with withstand and ambient temperature of 120°F without any apparent change of characteristics. It is considered satisfactory for use under these conditions.

DAVIS, R. K. Glass dome type incandescent approach lights. (Army Air Forces. Engineering Division. ENG-54-656-638-D). Off. Pub. Bd., Report, PB 9843. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A test was made of subject lights with neon type approach lights to find out which type was better. The incandescent type could be seen farther and from more directions than the neon type.

DIRCKSEN, A. D. Batteries, flashlight wet cell type. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-498). Off. Pub. Bd., Report, PB 10266. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Results of tests on sample wet cell battery designed by the Ideal Commutator Dresser Company. Comparative cyclic tests were made with standard type D and the wet batteries showed that the battery life of the dry cells was 1-½ times that of the wet battery. More light output was obtained from the dry cell than from the wet cell. The wet type flashlight battery is not considered satisfactory for use by the Army Air Forces because a special 1.93 volt lamp is required when using the wet type as compared to the 2.5 volt lamp which is used with the flashlight using the type D dry cell batteries. The 110 volt 60 cycle power supply is required for use in charging the wet type flashlight batteries, which in many cases would be impractical to accomplish in the field.

DIRCKSEN, A. D. Floodlight, portable, airplane maintenance. (Army Air Forces. Engineering Division. ENG-54-656-734). Off. Pub. Bd., Report, PB 9859. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
A memorandum report rejecting subject floodlight for use in AAF maintenance work because it was too large and cumbersome. A description of the floodlight is given. It is a 115 volt, 150 watt light made by Reliance Devices Company.

FRIEDRICH, E. J. Lamp assembly, 24 inch rigid drum type rotating beacon, Spec. AN-L-4. (Army Air Forces. Engineering Division. ENG-54-656-751). Off. Pub. Bd., Report, PB 9858. 1943. 8 p. Price: Microfilm - 50¢ - Photostat - $1.00
The beacon tested is a 115 volt, 1000 watt type used as an airport or airway beacon. It was tested for conformity to photometric requirements, and after refocusing proved satisfactory. Curves illustrate the tests.

GIESEMAN, E. R. Aircraft batteries. (Army Air Forces. Engineering Division. ENG-54-656-742). Off. Pub. Bd., Report, PB 9861. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Considerable battery trouble at Eglin Field, Florida, was found to be due to three main causes: (1) softened sealing compounds due to excessive generator voltage; (2) minor structural errors of the batteries, and (3) careless maintenance by field personnel. Action was initiated to remedy all three.

GIESEMAN, E. R. Aircraft batteries. (Army Air Forces. Engineering Division. ENG-54-656-750). Off. Pub. Bd., Report PB 9867. 1943. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00
An investigation was made of battery failures in P-47 aircraft and the results are presented. It was found that failure was due mainly to (1) excessive generator charging voltage, (2) improper installation of flexible drain tube causing it to clog, (3) improper maintenance at airfields, (4) drain tubes were of insufficient diameter.

GIESEMAN, E. R. Electrical cable solderless terminals and attaching tools. (Army Air Forces. Engineering Division. ENG-M-54-656-662). Off. Pub. Bd., Report, PB 9873. 1943. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
The results of tests are reported to see if one type of attaching tool is satisfactory for use with solderless terminals other than those for which the tool was designed. Of three types tested the Thomas & Betts Co. type WT-111 terminal attaching tool was found most satisfactory. Tests were made for resistance, vibration fatigue, tension, and corrosion.

GIESEMAN, E. R. Primary cable color coding. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-514). Off. Pub. Bd., Report. PB 10175. 1942. 3 p. Price: Microfilm - 50¢ - Photostat - $1.00
Report on a conference held at Washington, D.C, June 9 and 10, 1942, in connection with color coding of aircraft primary cable to expedite repairing of aircraft wiring in combat airplanes. Various systems of cable color coding were discussed. The system of coding by the application of various combination of colors of woven protective cable braid offers many disadvantages. The most suitable method of aircraft wiring identification was determined to be the use of Vinylite tubing in white, blue, red, green and black with numerals of contrasting colors. The Vinylite tubing can be fabricated in permanent colors which will not fade or discolor as a result of age.

GROSS, WILBUR Electrical cable and cable outlet connections. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-511A). Off. Pub. Bd., Report, PB 10245. 1942. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00
Ten asphalt impregnated covered cable specimens and cable outlet connections of Mines Co., ten Belden rubber covered cables and cable outlet connections of 40% crude and 60% reclaimed rubber, and ten asphalt impregnated covered General Electric cables and ten cable outlet connections fabricated of reclaimed rubber were tested to determine ultimate tensile strength. All cable specimens and the General Electric cable outlet connections were found satisfactory. Tables present test data.

GROSS, WILBUR. Electrical cable and cable outlet connections. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-511-B). Off. Pub. Bd., Report, PB 10247. 1942. 5 p. Price: Microfilm - 50¢ - Photostat - $1.00
Tests were conducted to determine ultimate tensile strength of connectors submitted by General Electric Co., Belden Manufacturing Co., Mines Equipment Co., and the Rome Cable Corp., and data were presented in tabular form. Samples submitted by General Electric Co., the Belden No. RS63340, and the Rome Corp. were found to be satisfactory.

GROSS, WILBUR. Electrical cable and cable outlet connections. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-511 C). Off. Pub. Bd., Report, PB 10248. 1942. 3 p. Price: Microfilm - 50¢ - Photostat - $1.00
The improved type Mines cable outlet connectors and the improved type Rome cable were tested to determine ultimate tensile strength and found satisfactory. The Anaconda "Duracord" cable had low tensile strength. Test data are presented in tabular form.

HARDING, W. T. Cable for field lighting sets. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-486). Off. Pub. Bd., Report, PB 10261. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of a visit to the Mines Equipment Company, St. Louis, April 29, 1942, to formulate a program for the substitution of a cable in lieu of the rubber jacketed cable being used. This cable is fabricated largely of reclaimed rubber, the outer jacket of which consists of a thin layer of rubber over which is woven a heavy cotton loom. A completed cable is then vulcanized and impregnated with a moisture repelling compound. A proposed specification for this type of cable was prepared and is included in the report as Exhibit A.

HARDING, W. T. Visit to Cutler-Hammer Co. (Army Air Forces. Engineering Division. ENG-M-54-656-639). Off. Pub. Bd., Report, PB 9842. 1943. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
A memorandum report recording a visit to discuss engineering details of a special starting and control switchboard for the Equipment Laboratory Building of the Engineering Division.

MOORE, C.R. Westinghouse reverse current relay. (Army Air Forces. Experimental Engineering Section. Memorandum Report EXP-M-54-656-529). Off. Pub. Bd., Report, PB 10231. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of results of a conference between representatives of the Materiel Center and Westinghouse Company at Lima, Ohio, June 19, 1942, and tests on a modified relay. Because of the excessive number of failures in service of the subject relays, the Westinghouse Company had been ordered to cease production. The results of the tests were sufficiently satisfactory so that production of the modified relay was resumed.

MORAN, D. L. Test of vinyl chloride transparent insulating sleeve for connector assemblies. (Army Air Forces. Engineering Division. ENG-54-656-743). Off. Pub. Bd., Report, PB 9864. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The tests conducted were to determine the insulating properties at temperatures of -65°F. and +200°F. They were found to be satisfactory. Advantages in the use of the sleeve are also listed.

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT. Further work on hookup wires, February 27-March 9, 1945. (Tropical deterioration administrative committee Report 92). Off. Pub. Bd., Report, PB 11977. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes an experience the purpose of which was to determine the effect of adding a known amount of sugar to spore suspensions and to compare this with the effect of "unknown" nutrient from potato dextrose agar. It was concluded that the addition of glucose (0.1% concentration) to a spore suspension appeared to have little if any effect on the growth of fungi on hookup wires. There is also included report of an experiment made to determine how much nutrient carbon (in the form of readily water-soluble carbon compounds) is extracted from potato dextrose agar slants in the preparation of spore suspensions.

PODHORZER, EMIL. Relay, General Electric part 3 CTR72C1. (Army Air Forces. Engineering Division. ENG-M-54-656-290XXX). Off. Pub. Bd., Report, PB 10141. 1943. 3 p. Price: Microfilm - 50¢ - Photostat - $1.00
Report of a conference of Materiel Center representative with representatives of the General Electric Company at Schenectady, New York, on February 18-20, 1943. The conference was held to discuss possible improvements of relays and regulators and to witness tests of relays in airplane electrical systems. The following improvements to be made on relay 3GTR72C1 were considered important: Improving polarization increasing interrupting capacity, improving temperature compensation and pick-up voltage stability. Short circuit tests on the following relay switches are described: General Electric relay switch - part no. 3GTR72 C1, Westinghouse relay switch - part no. 1240224-A, and Leece-Neville relay switch - part no. 24552.

PODHORZER, EMIL. Relay, generator control switch, differential voltage type, Allen-Bradley Company part No. x-89158. (Army Air Forces. Engineering Division. ENG-54-656-757 A). Off. Pub. Bd., Report, PB 9869. 1943. 8 p. Price: Microfilm - 50¢ - Photostat - $1.00
A report of results of acceptance tests on subject relay. Tests were made for reverse voltage, differential voltage, reverse current, relay pick-up, drop-out voltage, drop-out characteristics under load, closing of main contacts on battery voltage, sand test, variation with change of ambient temperature, heating at rated current and at 29 volts, endurance, power consumption, short circuits, and impact. A schematic diagram, curves of relay cut-out characteristics and a discussion of operation and test results are presented.

PODHORZER, EMIL. Relay, generator control switch, (Differential voltage type) submitted by General Electric Co., Schenectady, N.Y. (Army Air Forces. Engineering Division. ENG-54-656-757 B). Off. Pub. Bd., Report, PB 9870. 1943. 6 p. Price: Microfilm - 50¢ - Photostat - $1.00
A report of test results for subject relay. Tests were made for chatter during relay adjustments, vibration, temperature, loss of field generator, and short circuits. Changes to correct test deficiencies are recommended. A schematic diagram of the relay is shown.

PODHORZER, EMILE. Relay, generator control switch part No. 3GTR72C1, modified, submitted by General Electric Co., Schenectady, N.Y. (Army Air Forces. Engineering Division. ENG-54-656-757 C). Off. Pub Bd., Report. PB 9871. 1943. 3 p. Price: Microfilm - 50¢ - Photostat - $1.00
A report of results of tests made on subject relay after certain modifications were made to have more effective temperature compensation and interrupting capacity. See also PB 9870.

REYNOLDS, J. P. Regulator assembly, brightness control, 6KW, portable remote control. (Army Air Forces. Engineering Division. TSEPE-656-1433 C). Off. Pub. Bd., Report, PB 9994. 1946. 19 p. Price: Microfilm - 50¢ - Photostat - $2.00
A report of tests on the subject regulator which is for use with series lighting systems, including portable runway lighting sets. It has both manual and remote control and weighs 670 pounds. It is air cooled and requires no oil. Tests were made for variable resistance, short circuit and 137.8 ohms load on voltage taps other than 230 volts, short circuit and rated resistance on secondary voltage with variable primary voltage, temperature, component parts analysis, and dielectric analysis. Tables, graphs, and three photographs illustrate the findings and the regulator.

ROWLAND, J. E. Circuit breakers, 120 amperes, three pole, 400 cycle. (Army Air Forces. Engineering Division. TSEPE-656-1563). Off. Pub. Bd., Report, PB 9991. 1946. 7 p. Price: Microfilm - 50¢ - Photostat - $1.00
The results of tests for operating time, interrupting capacity, vibration, shock, insulation, sand and dust, life and humidity of the subject circuit breaker are given in this report. It is found that it is satisfactory for an interrupting capacity of 2000 amperes. A photograph illustrates the circuit breaker.

TOLENTINO, J. G. Lamp assembly, cabin, type A-11, (Work table). (Army Air Forces. Engineering Division. ENG-M-54-656-664). Off Pub. Bd., Report, PB 9874. 1943. 1 p. Price: Microfilm - 50¢ - Photostat - $1.00
A report of the result of a vibration test on subject lamp assembly finds it satisfactory.

TOLENTINO, J. G. Rheostat for Mazda lamp No. 684 for reflex gunsights. (Army Air Forces. Engineering Division. ENG-M-54-656-660). Off. Pub. Bd., Report, PB 9872. 1943. 3 p. Price: Microfilm - 50¢ - Photostat - $1.0
This is a memorandum giving the results of tests to determine a suitable rheostat for use with N-6 and N-3A gunsight lamps. It was decided to use one having a rating of 50 watts and 200 ohms.

MEDICAL RESEARCH AND PRACTICE, INCLUDING CLINICAL APPLICATION OF DRUGS AND PHARMACEUTICALS

ALEXANDER, S.F. and GINSBURG, T.H. Intravenous oxygen therapy of phosgene poisoning; effects of intravenous oxygen administration. (Chemical Warfare Service. Medical Division. MD(EA). Memorandum Report 52). Off. Pub. Bd., Report, PB 11184. 1942. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
Goats gassed with phosgene and treated with intravenous oxygen infusions rapidly died. Their mortality was universal and their survival time only a fraction of that of control goats. Studies of the action of intravenous oxygen alone in the goat and rabbit disclosed that the lethal factor was obstruction of the pulmonary arterial vascular bed followed by lung edema and right heart failure. This action complementing phosgene poisoning is rapidly fatal. Tables, a graph, and a bibliography are included.

ALEXANDER, S. F. and GINSBURG, T. H. The use of subcutaneous oxygen as the treatment of phosgene poisoning in the rabbit. (Chemical Warfare Service. MD(EA) Memorandum Report, 50). Off. Pub. Bd., Report, PB 11182. 1942. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
The above treatment was found to be of no value. Oxygen injected subcutaneously was poorly utilized by the body. Studies of hemocellular values failed to reveal any consistent changes. Tables and a bibliography are included.

COON, JULIUS M., and others. Toxicity studies of phosphorus, phosphoryl and thiophosphoryl halides: Progress report to July 30, 1943. (University of Chicago Toxicity Laboratory Report 32. OSRD Report 1716). Off. Pub. Bd., Report, PB 6518. 1943. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
Fourteen compounds were tested for toxicity on mice at concentrations ranging from 0.5 to 4.0 mg./l. Only $PSCl_2F$ killed more than 50% of the mice at a concentration less than 1.9 mg./l. None were toxic enough to be useful in chemical warfare. Tables are included in this progress report under contract with the University of Chicago. Work was done under R. M. K. Geiling, official investigator, and Franklin C. McLean, director of the toxicity laboratory.

DIXON, PAUL R., and others. The effect of the resistance to inspiration imposed by the combat gas mask canister on the ability of soldiers to do exhaustive work in temperate and in simulated tropical conditions. (Chemical Warfare Service, Edgewood Arsenal, Medical Division Report 9). Off. Pub. Bd., Report, PB 9513. 1944. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
This report states that the psychological factors in the gas mask outweighed by far any physiological effect that the gas mask may have in limiting the ability of the wearer to perform exhaustive work. It is recommended that troops be impressed with the fact that they can do as much work when wearing the mask as without it. Men trained in the use of the gas mask can do exhaustive physical work for short periods of time without injury to themselves.

DZIEMIAN, ARTHUR J. The effects of body-gassing with H vapor on the carbohydrate metabolism of dogs. (Chemical Warfare Service. Medical Division Report 59). Off. Pub. Bd., Report, PB 9530. 1945. 28 p. Price: Microfilm-50¢ - Photostat-$2.00
Experiments indicate that body-gassing of dogs with H vapor causes a moderate hyperglycemia during the first two days after gassing, followed by a decrease to normal or hypoglycemic values by the fifth or sixth day after H. After H the oral glucose tolerance curves become flatter than normal, but are delayed in returning to the initial blood glucose values, giving a plateau type of curve as shown. This flattening may be partially due to the increased disappearance of added glucose from the blood (shown by the intravenous glucose tolerance tests), and also to a possible decrease in absorption of glucose through the intestinal wall. Insulin tolerance tests indicate a somewhat increased sensitivity to insulin over normal in the H treated dog. Appendices contain tables and diagrams presenting test data and results. Bibliography is included.

DZIEMIAN, ARTHUR J., and others. The effects of H in oil applied to the skin of dogs. (Chemical Warfare Service, Edgewood Arsenal, Medical Division Report 27). Off. Pub. Bd., Report, PB 9519. 1945. 14 p. Price: Microfilm-50¢ - Microfilm-$1.00
H in oil applied to the skin of dogs produced effects in some ways similar to those reported for the victims of an accident. A condition of shock and renal tubular lesions occurred in some of the animals. In contrast to the human cases, however, the dogs developed a leucocytosis rather than a leucopenia. Tables are included in the report.

DZIEMIAN, ARTHUR J. The effects of the intravenous administration of H on the carbohydrate metabolism of dogs. (Chemical Warfare Service. Medical Division. Report 60). Off. Pub. Bd., Report, PB 9531. 1945. 21 p. Price: Microfilm-50¢ - Photostat-$2.00
Tables and diagrams presenting test data indicate that dogs given H intravenously show no consistent significant changes in the venous blood glucose after poisoning. Nor was there any indication of the hypoglycemia found in the body-gassed animals. X-ray studies show a delay in the stomach emptying time after intravenous H, in all probability the cause of the flat oral glucose tolerance curves. Differences in results obtained on blood glucose concentrations, oral glucose tolerance tests and gastrointestinal motility tests in dogs body-gassed with H vapor and in dogs poisoned with intravenous H indicate that the effects of the toxic agent given by the two methods are not similar.

HAMILTON, JOSEPH G. and AXELROD, DOROTHY. Determination of the distribution of H and L in skin and eye tissues by radio-autographic techniques, progress report. (OSRD Report 1911). Off. Pub. Bd., Report, PB 6521. 1943. 32 p. Price: Microfilm-50¢ - Photostat-$3.00
The distribution of two vesicants, mustard and lewisite (labeled with radioactive sulfur and arsenic, respectively), in skin and eye tissues has been studied using the radio-autographic technique. In human skin the radioactively tagged mustard was fixed in the epidermis and to a less extent in the corium. Radioactively tagged lewisite was fixed primarily in epithelium with very little in the corium, in tissues excised at twenty-four hours after exposure. Comparison of the stained histological sections with the films exposed to the action of the radioactive tracers serves to show the depth of penetration of the vesicant in the tissues and part of the histological distribution. A method for quantising the darkening of photographic film in radio-autography is described. Photographs and a graph are included. This is a progress report under contract with the University of California.

HELM, JOHN D., JR., and others. Further service tests of the head wound gas mask (M7-11-9). (Chemical Warfare Service. Medical Division Report 8). Off. Pub. Bd., Report, PB 9512. 1944. 14 p. Price: Microfilm-50¢ - Photostat-$1.00

When the head wound gas mask was applied by use of the tapes alone, to subjects with neck dressings, gas leaks occurred in 7 to 90 seconds. When head wound gas masks were applied to subjects with neck dressings, adhesive tape was used to ensure against gas leaks. The procedure for taping the mask in 120 to 200 seconds is outlined herein as is the procedure for applying a head wound gas mask to a patient with a tracheotomy tube in place.

KIDD, JOHN G., and LANDSTEINER, KARL. Induced hypersensitivity to bis (β-chloroethyl)sulphide (mustard gas) and to 2,3-dimercaptopropanol (BAL) in guinea pigs: Formal progress report, January 2, 1944. (OSRD Report 3269). Off. Pub. Bd., Report, PB 6520. 1944. 20 p. Price: Microfilm-50¢ - Photostat-$2.00
This report contains descriptions of experiments on the sensitization of the skin of guinea pigs to mustard gas. Sensitization was regularly obtained and was enduring; all attempts at desensitization were fruitless. It also contains the first experiments demonstrating the sensitizing power of BAL in guinea pigs. Tables and a bibliography are included. This is a progress report under contract with the Rockefeller Institute for Medical Research.

LAUGHLIN, ROBERT C. The therapeutic effect of BAL ointment in the eyes of rabbits contaminated with liquid mustard compared to irrigation with water and NDR 602 ointment. (Chemical Warfare Service, Edgewood Arsenal. Medical Division Report 12). Off. Pub. Bd., Report, PB 9516. 1944. 21 p. Price: Microfilm-50¢ - Photostat-$2.00
Standard army issue BAL ointment has some beneficial therapeutic effect on liquid H contamination of the eyes of rabbits, although less than the effect of adequate irrigation, according to this report. Also BAL ointment is at least as effective as NDR 602 ointment on liquid H in the eye, and treatment by BAL ointment and irrigation combined is superior to irrigation alone. Tables are included in the report.

MAZUR, ABRAHAM, and BODANSKY, OSCAR. The mechanism of the detoxification of PF3 and related fluorophosphates in the animal organism. (Chemical Warfare Service, Edgewood Arsenal, Medical Division Report 29). Off. Pub. Bd., Report, PB 9521. 1945. 28 p. Price: Microfilm-50¢ - Photostat-$2.00
Rabbit and human serum, red cells and tissues contain an enzyme which accelerates greatly the decomposition of fluorophosphates to the alkyl phosphoric acid, hydrogen and fluoride ions. This enzyme mechanism is important in the detoxification of PF3 and related fluorophosphates, Liver, which contains a high concentration of this enzyme, plays a significant role in the detoxification of these compounds in the intact animal.

PRATT, H. J., and others. Intravenous toxicity of cyanogen chloride and sodium cyanide in dogs, goats and rabbits. (Chemical Warfare Service, Edgewood Arsenal, Medical Division Report 26). Off. Pub. Bd., Report, PB 9518. 1945. 22 p. Price: Microfilm-50¢ - Photostat-$2.00
The object of the work covered by this report was to determine the intravenous toxicities and the rates of detoxication of cyanogen chloride and sodium cyanide in dogs, goats and rabbits. Tables present data on the results of the studies. This report concludes that anesthesia has little effect on the susceptibility of rabbits to intravenously administered CK, the rate of detoxication of CK for dogs and rabbits and of NaCN for rabbits is constant in the range of dosages studied, and the rate for detoxication of CK for goats is a decreasing function of time within the range of dosages studied.

ROTARIU, G. J. Toxicity studies of substituted halogenated aliphatic hydrocarbons: Progress report to June 25, 1943. (University of Chicago Toxicity Laboratory Report 19). (OSRD Report 1631). Off. Pub. Bd., Report, PB 6519. 1943. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
This investigation was undertaken to determine whether any of a group of substituted halogenated aliphatic hydrocarbons related to chloropicrin were potential chemical warfare agents. None exhibited a sufficient degree of toxicity by inhalation. In the ethane series, the chloro-nitro substitution was found more toxic than the fluoro-nitro grouping. Data are given in tables and references are included. This is a progress report under contract with the University of Chicago. The work was performed under E. M. K. Geiling, official investigator, and Franklin C. McLean, director of the toxicity laboratory.

SILVER, S. D. The relation of time to the dose required to produce a given physiological effect. (Chemical Warfare Service. Medical Division Report 22). Off. Pub. Bd., Report, PB 9420. 1945. 23 p. Price: Microfilm-50¢ - Photostat-$2.00
A general equation is presented relating time of exposure, concentration of agent and rate of detoxication: $Ct = K + at^{b+1}$, when

C = concentration of agent
t = time of exposure
K = a constant related to species susceptibility
a = " " " " the magnitude of rate of detoxication
b = a constant related to change of rate of detoxication.

Terms are evaluated by a graphical method herein described. Bibliography is included.

TATUM, HOWARD J., and HIMMELFARB, SYLVIA. A comparison of the effect of breathing air and 100% oxygen under atmospheric and increased pressure upon the arterial oxygen saturation of CO gassed dogs. (Chemical Warfare Service. Medical Division Report 53). Off. Pub. Bd., Report, PB 9528, 1945. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
Dogs were gassed with CO at an average concentration of 0.3 mg./l for 10 minutes. A period of 12 to 16 hours was permitted to elapse for the development of pulmonary edema and hypoxia before institution of therapy. Results of experiments presented in tabular form indicate that continuous positive pressure breathing per se does not consistently elevate the arterial oxygen saturation in mildly CO poisoned dogs. 6 to 8 cm. water positive pressure combined with 100% oxygen does not increase arterial oxygen saturation beyond that obtained with inhalations of oxygen at atmospheric pressure. Bibliography is included.

TATUM, HOWARD J., and GINZLER, ARTHUR M. Effects of increased intratracheal pressure in normal and CO poisoned dogs. (Chemical Warfare Service. Medical Division Report 30). Off. Pub. Bd., Report, PB 9522. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
A group of dogs was gassed with CO in concentrations ranging from 0.4 mg./l. for 5 minutes to 1.0 mg./l. for 15 minutes. After an interval of 6 to 18 hours to permit the development of pulmonary edema, these animals together with ungassed controls were subjected to experiments to compare the effects of increased intratracheal pressure on the pulmonary tissue of dogs gassed with CO and of normal dogs. Results indicate that the response of venous pressure, arterial pressure and respiration in normal and in CO-gassed dogs subjected to similar levels of intratracheal pressure is essentially the same. The pathologic changes in the pulmonary tissue resulting from increased intratracheal pressure consist of interstitial emphysema and air embolism.

ZINGARO, F. P., McNAMARA, B. P. and HARRISON, A. H. The comparative therapeutic value of various BAL products and certain derivatives in the treatment of rabbits' eyes exposed to lewisite vapors. (Chemical Warfare Service. Medical Division. MD(RA) Memorandum Report 85). Off. Pub. Bd., Report, PB 11383. 1943. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Experiments were conducted to determine the relative therapeutic value of several BAL products or derivatives in the treatment of rabbits' eyes contaminated by lewisite vapors and the results are presented in graphic form. Eye solutions M-1, NDR-287, NDR-133-26, and NDR-133-27 show high effectiveness, but NDR-317 is of doubtful value.

METEOROLOGY AND CLIMATOLOGY

HAURWITZ, B. Final report on the use of symmetry points in the pressure curves for long-range forecasting. (Army Air Forces, Weather Division, Report 709). Off. Pub. Bd., Report, PB 12953. 1944. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Results of the investigation were negative. It seems unlikely that a method of predicting symmetries can be evolved, since symmetry does not occur more frequently than it would in a series of terms with normal frequency distribution and a random order. Symmetry shows little tendency to persist, so it cannot be used for forecasting by the time it is noticed in a pressure graph. Research was done in the Department of Meteorology, Massachusetts Institute of Technology.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Non-frontal cumulus clouds on the North Atlantic routes. (Report 884). Off. Pub. Bd., Report, PB 8291. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
This report has been prepared by personnel of the Army Air Forces Weather Station at the Massachusetts Institute of Technology. It is a climatological and statistical study of the frequency, height and location of non-frontal or air-mass cumulus clouds on 3 of the principal North Atlantic routes during January, February and March of 1944. It is a preliminary report on an Army Air Forces research project to investigate methods of forecasting the elevation of tops of non-frontal cumulus formed over the Atlantic. Primarily statistical analyses have been employed in this paper; little attempt has been made to theorize. During the 3-month period, a total of 109 weather flights were made. Report discusses frequency, height and location of cumulus, and contains map, tables and graphs.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Notes on the use of the charts entitled Climatic Zones of the World. (Report 716). Off. Pub. Bd., Report, PB 12954. 1944. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
It is not advisable to use these charts, without supplementary data, for planning military operations in any region. Charts such as these are based on mean values for certain climatic elements, and do not show range of variation of these elements, nor other detailed information important for a true picture of a given region.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Accra Airport, Accra, Gold Coast, Africa. (Report 600-219). Off. Pub. Bd., Report, PB 12949. 1945. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses location and topography, oceanic effect on weather, general climatic regime, haze and fog, and precipitation (which is responsible for the poorest flying weather at Accra). Tables give mean percentage occurrence of various precipitation types by months, seasonal surface wind rose data by direction and velocity group, mean percentage occurrence by months of various visibility limits and restrictions to visibility, ceiling height and sky condition, and "contact", "instrument" and "closed" flying weather by seasons, months and hours of the day. All studies of this series were prepared by forecasting personnel of the local stations, and edited by the Weather Division at Headquarters, Army Air Forces.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Aguadulce Airport, Aguadulce, Republic of Panama. (Report 600-213). Off. Pub. Bd., Report, PB 12927. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Contains geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station, climatic statistics, and orographic effect and smoke pollution wind rose.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Army Air Base, Great Falls, Montana, October, 1944. (Report 600-123). Off. Pub. Bd., Report, PB 10395. 1944. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains topographic map, orographic effect and smoke pollution, wind rose and climatic statistics.

U.S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Christmas Island, February 1945. (Report 600-245). Off. Pub. Bd., Report, PB 12786. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Bangalore Airport, Mysore, India, Feb. 1945. (Report 600-223). Off. Pub. Bd., Report, PB 12945. 1945. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Beane Field, St. Lucia, B.W.I., April 1945. (Report 600-246). Off. Pub. Bd., Report, PB 12785. 1945. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains topographic map and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Boca Raton Army Air Field, Boca Raton, Florida Feb. 1945. (Report 600-191). Off. Pub. Bd., Report, PB 10352. 1945. 26 p. Price: Microfilm-50¢ - Photostat-$2.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Maps illustrative of typical synoptic situations are given. Contains topographic map, orographic effect and smoke pollution, wind rose, and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Cheyenne, Wyoming, November, 1944. (Report 600-154). Off. Pub. Bd., Report, PB 10339. 1944. 14 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Includes maps illustrating typical synoptic situations. Contains topographic map.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Chicago Municipal Airport, Chicago, Illinois, April 1945. (Report 600-260). Off. Pub. Bd., Report, PB 12813. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains topographic map, orographic effect and smoke pollution, wind rose, and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Clovis Army Air Base, New Mexico, October, 1944. (Report 600-117). Off. Pub. Bd., Report, PB 10364. 1944. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. See also Weather Division Report 600-117A, Stratus forecasting at Clovis Army Air Base (PB 10362), reported on p. 623.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, David Airport, David, Republic of Panama, Feb. 1945. (Report 600-233). Off. Pub. Bd., Report, PB 12797. 1945. 20 p. Price: Microfilm-50¢ - Photostat-$2.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. There is a time cross-section of winds aloft illustrating the passage of an easterly wave. Contains topographic map, orographic effect and smoke pollution wind rose, and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Davis-Monthan Field, Tucson, Arizona, Oct., 1944. (Report 600-118). Off. Pub. Bd., Report, PB 10363. 1944. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains topographic map and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Deming Army Air Field, Deming, New Mexico, Dec. 1944. (Report 600-186). Off. Pub. Bd., Report, PB 10357. 1944. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Deversoir Airport,Deversoir, Egypt, Feb. 1945. (Report 600-200). Off. Pub. Bd., Report, PB 12817. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains orographic effect and smoke pollution wind rose.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, East Anglia and vicinity, England. (Report 600-240). Off. Pub. Bd., Report, PB 12791. 1945. 68 p. Price: Microfilm-$1.00 - Photostat-$5.00
Topography, synoptic and climatic factors are considered for the entire region. Local peculiarities are then briefly discussed for 21 air fields. Topographic maps and climatic statistics are included.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, El Pato Airport, Talara, Peru, March 1945. (Report 600-238). Off. Pub. Bd., Report, PB 12793. 1945. 14 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains orographic effect and smoke pollution wind rose, and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Fairfield-Suisun Army Air Field, Fairfield, California, April, 1945. (Report 600-256). Off. Pub. Bd., Report, PB 12809. 1945. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Charts illustrate synoptic situations favoring good or bad weather in the winter, and light or high winds in the summer. Contains topographic map and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Fall River, New Guinea, Feb. 1945. (Report 600-227). Off. Pub. Bd., Report, PB 12942. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Synoptic maps illustrate a typical winter cold frontal situation with development of a wave near eastern New Guinea. Contains orographic effect and smoke pollution wind rose, and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Florence Army Air Field, Florence, South Carolina, April 1945. (Report 600-277). Off. Pub. Bd., Report, PB 12931. 1945. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains topographic map and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, France Field, Colon, Canal Zone, Feb. 1945. (Report 600-242). Off. Pub. Bd., Report, PB 12789. 1945. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains topographic map and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Gardner Field, Taft, California, April 1945. (Report 600-250). Off. Pub. Bd., Report, PB 12804. 1945. 18 p. Price: Microfilm-50¢ - Photostat-$2.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather rules and practices in forecasting weather at this station. Contains topographic map, and climatic statistics.

U. S. ARMY AIR FORCES. WEATHER DIVISION. Studies on local forecasting, Gaya Airport, Bihar, India, April 1945. (Report 600-241). Off. Pub. Bd., Report, PB 12790. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses geographic and topographic considerations, climatic and synoptic considerations, peculiarities of local weather, rules and practices in forecasting weather at this station. Contains orographic effect and smoke pollution and climatic statistics.

U. S. WEATHER BUREAU. STATISTICS DIVISION. Average and maximum wind velocities at selected stations; special report. (Report 502). Off. Pub. Bd., Report, PB 12956. 1943. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Prevailing direction as well as the above information (all by months) is given for a large number of stations on the Atlantic, Pacific and Gulf coasts of the U.S., and Alaska, Hawaii and Puerto Rico

U. S. WEATHER BUREAU. STATISTICS DIVISION. Climatic statistics for selected stations in Belgium, Japan & U.S.S.R.; special report. (Report 515). Off. Pub. Bd., Report, PB 12955. 1943. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Mean, mean maximum, mean minimum, highest and lowest temperatures, mean highest and lowest precipitation, mean cloudiness at 8 A.M. and 1 P.M., and days of fog, all by months, are given for 8 stations in Belgium. Same temperature data as above, mean precipitation, maximum precipitation in 24 hours, mean cloudiness, and days of fog, all by months, are given for Nemuro and Shana, Japan and Petropavlovsk, Kamchatka, Siberia.

U. S. WEATHER BUREAU. STATISTICS DIVISION. Rainfall and temperature, Wake Island and Chicago, Ill.; special report. (Report 508). Off. Pub. Bd., Report, PB 12956. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Temperature data are actually for Saipan in the Marianas Islands. Data given are: Mean, highest, lowest, and average rainfall, number of rainy days, mean maximum, mean minimum mean highest and lowest temperatures, all by months, with annual figure also given.

ORDNANCE AND ACCESSORIES

U. S. CHEMICAL WARFARE SERVICE. Foreign chemical incendiary and smoke bombs. (CWS Field Lab. Memo. 2-1-6). Off. Pub. Bd., Report, PB 11506. 20 p. Price: Microfilm-50¢ - Photostat-$2.00
The report enumerates British, Russian, French, German, Italian and Japanese smoke and incendiary bombs giving their weight, type of filling and description followed by drawings and includes a special tabulation of analyses of various fillings of the German 1 kg magnesium incendiary bomb.

U. S. CHEMICAL WARFARE SERVICE. Foreign flame thrower. (CWS Field Lab. Memo 2-3-3). Off. Pub. Bd., Report, PB 11515. 1943. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
This report contains descriptions and illustrations of British, Russian, German, Italian and Japanese flame throwers.

U. S. CHEMICAL WARFARE SERVICE. Marking of German, Italian, Japanese and French bombs. (CWS Field Lab. Memo. 2-1-5). Off. Pub. Bd., Report, PB 11505. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This report gives the markings of various kinds of bombs as used by Germany, Italy, Japan and France and a comparative table of marking of bombs containing chemical warfare agents.

U. S. CHEMICAL WARFARE SERVICE. Screening, signal and toxic smokes. (CWS Field Lab. Memo. 1-0-1). Off. Pub. Bd., Report, PB 11562. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report gives the screening, signal and toxic smoke agents used in American, British, German, Italian and Japanese practice.

German

DIXON, C. A. Hak Hanseatisches Kettenwerke G.m.b.H. - Hamburg. (C.I.O.S. Target 2/22d). Off. Pub. Bd., Report, PB 6651. 1945. 14 p. Price: Microfilm-50¢ - Photostat-$1.00
General description of a factory built in 1935 for the exclusive production of armaments. Only empty components were manufactured. Answers to questionnaries submitted are included and a plan of the factory site is given.

HINDS, A. H., COPPACK, S. W. and GARRATT, A.J. Polte-Werke, Magdeburg. Off. Pub. Bd., Report, PB 6652. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a report of a visit to a firm manufacturing the metallic components of small arms ammunition up to 40 mm. Indications were found of the manufacture of S.A.A. bullets in solid steel. Development work has been done on high velocity coned bore and tungsten carbide A.P. lot, also on light alloy cartridge cases and corrosion resistance. Documents and stores removed are listed.

SCHILLING, ROBERT. German tank design trends. (C.I.O.S. Item 18 and 19. File XXIX -58). Off. Pub. Bd., Report, PB 12634. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Plans for heavier armament went on up to 1945, but trend to heavier tanks had practically stopped. Ballistic requirements took first place in design of hulls. Arrangement of Tiger and Panther radiators, in floodable compartments separate from the engine compartment, has many advantages. Bakelite and other composition bearings have performed well in many applications. Other miscellaneous developments are discussed.

U. S. CHEMICAL WARFARE SERVICE. German 2.2 kg. explosive incendiary bomb. (CWS Field Lab. Memo. 2-1-2). Off. Pub. Bd., Report, PB 11502. n.d. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This bomb, a description of which is given in this report, has proved effective since the delay train cannot be extinguished by spraying or by immersing in water. One disadvantage is that about 50% of the bombs are duds.

U. S. CHEMICAL WARFARE SERVICE. Notes on German pyrotechnics. No. 1. (CWS Field Lab. Memo. 4-6-3). Off. Pub. Bd., Report, PB 11545. 1943. 62 p. Price: Microfilm-$1.00 - Photostat-$5.00
This document deals with cartridges which may be fired from the German 27 mm. signal pistols or which have the same bodies as those cartridges. It contains the description of such cartridges, their use for signals, their meaning to the troops, methods of packing and a short vocabulary of German signal cartridge designations. This publication was also issued by the British War Office in December 1943 in the series ETF 550 E3643.

WHITEY, C. F. Reich ministry of armaments and war production; Part II - summary of technical information. (CIOS Target 28/5.01). Off. Pub. Bd., Report, PB 4268. 1945. 35 p. Price: Microfilm-50¢ - Photostat-$3.00
Interrogation of Reich Minister Speer and three members of the technical office - Saur, Mommsen, and Bosch. Brief discussions of various German developments during the war of tanks, anti-tank guns, anti-aircraft weapons, coastal defenses, long range guns, U-boats, aircraft, projectiles, and explosives.

Italian

GOLDENSON, J., and JOSEPHSON, JANICE. The Italian 2 Kg. incendiary bomb. (Chem. Warfare Service F.M.T.R. 108.) Off. Pub. Bd., Report, PB 4502. 1945. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
"The Italian 2 Kg. Incendiary Bomb, 10.6 in. long x 2.7 in. in diameter, consisted of two cylinders held together by an adapter-plate, weighed approximately 4-1/2 lbs., and was painted green. The upper cylinder contained a main filling of thermate, an intermediate starter mixture, and the fuse assembly; the lower one contained a high-boiling turpentine oil. Bomb had no tail assembly." Complete description, photographs, assembly blueprint, and analyses of the incendiary materials are given.

Japanese

GOLDENSON, J., and others. Japanese large toxic smoke (DC) generator. (F.M.T.R. 96.) Off. Pub. Bd., Report, PB 4507. 1944. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
"A large cylindrical sheet metal can with carrying handle and bipod support contained 16 lb. 11 oz. of what is believed to have originally been diphenylcyanarsine 45% and celluloid 55%. This can was painted dark greenish-brown, measured 46.7 cm. high and 20.4 cm. dia. and weighed 28 lbs. Ignition was accomplished by means of a potasium chlorate-antimony sulphide matchhead which was in contact with a starter mix composed of organic binder 0.2%, $KClO_3$ 26.8%, K_2CrO_4 6.4% and Sb_2S_3 66.6%. Two photos of the generator and a sketch of the ignition element are included."

U. S. CHEMICAL WARFARE SERVICE. Adopted nomenclature for Japanese chemical warfare items. (CWS Field Lab. Memo. 2-0-1). Off. Pub. Bd., Report, PB 11501. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Description of Japanese chemical warfare items and names adopted for their designation.

United States

AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Report on the manufacture of demolition bomb bodies. Off. Pub. Bd., Report, PB 3095. 1945. 257 p. Price: Microfilm-$3.00 - Photostat-$18.00
This report covers the manufacturing of demolition bomb bodies, defined as G.P. (general purpose) and S.A.P. (semi-armor-piercing), and specifically the 100-, 250-, and 1000-lb sizes, and also the 4000-lb L.C. (light-case) bomb. Some observations were also made on the manufacture of 1600-lb A.P. (armor-piercing) bombs. The objective is to record and compare critically all methods of bomb-body manufacture, leading to a comparison involving the economics of production, and resulting in recommendations as to modifications to the present practice, and for the future, as well. It also gives the names of firms visited during the study of manufacturing methods and presents plans of some of their plants. Photographs and drawings of tools, equipment, etc. are also included.

BRUUWKES, R., JR. and LANING, J. H., JR. Gun tubes, stresses and deformations of circular cylinders. Part I mathematical analysis for cylinders under uniform pressure. (Watertown Arsenal Laboratory. W.A. Report 660/16). Off. Pub. Bd., Report, PB 4368. 1943. 16 p. Price: Microfilm-50¢ - Photostat-$2.00
Formulas are developed in this report describing the complete and partial yielding of hollow circular cylinders under uniform internal and external pressure to be used as bases for subsequent application to the design of guns and shells.

BORTMAN, W. J. Strength of shell vs. strength of solder brazed joint at adapter. (Budd Wheel Co., Engineering Dept. Investigation M-2, Report 2). Off. Pub. Bd., Report, PB 3094. 1945. 9 p. Price: Microfilm-50¢-Photostat-$1.00
This report outlines a method for testing the strength of a M-57 shell and the strength of a solder brazed joint by internal hydrostatic pressure. Includes drawing, table and charts. It was concluded that strength of solder brazed nose adapter is equal to strength of the shell body.

BROWN, GEORGE GRANGER, KUHATA, FRED and KUIST, BLAINE B. The formation of screening smokes. (OSRD Report 414). Off. Pub. Bd., Report, PB 8078. 1942. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
Report of work done in the laboratories of the Chemical and Metallurgical Engineering Department of the University of Michigan, to January 15, 1942. The previous report on this project was "Mechanical formations of smokes", by the same authors, September 1941. This report includes additional data on the formation of screening smokes by spraying aqueous salt solutions at high pressures through atomizing nozzles. Based on the data taken with nozzle H-466, 0.025" orifice, it appears that: (1) Not more than about 2% of the total salt sprayed at nozzle pressures up to 5000 p.s.i. remains suspended in the air for a time interval greater than five minutes; (2) for the same amount of salt suspended in air, the light absorption quality of the fog improves with increase in nozzle or spraying pressure; (3) the quality of the fog increases rapidly with increases in nozzle or spraying pressure up to about 4000 p.s.i. and less rapidly at higher pressures. Report includes a plan of the new smoke room, flow diagram for pumping apparatus mounted on truck, and graphs showing results of experimentation.

CATWOOD, W. Model study of the Rotaflail. Second report. (OSRD Report 4197). Off. Pub. Bd., Report, PB 11206. 1944. 38 p. Price: Microfilm-50¢ - Photostat-$3.00
This report deals with a type of mechanical mine-exploder, a device consisting of a large rotating drum mounted in front of a tank, carrying flails which beat the ground. It discusses new model studies of a modified form, describes the apparatus for testing impact strength and the results of the tests made on a partial full scale model. Photographs and drawing are given in this report which supplements PB 11207; PB 11208 is final report on this subject. Investigations were made at Carnegie Institute of Technology. PB 11208 is on this page and PB 11207 is on p. 701.

CATWOOD, W. Model study of the Rotaflail. Final report. (OSRD Report 5165). Off. Pub. Bd., Report, PB 11208. 1945. 33 p. Price: Microfilm-50¢ - Photostat-$3.00
This report covers laboratory and field experiments on the Rotaflail, a type of mechanical mine-exploder to be mounted in front of tank. It consists of a large rotating drum and carried flails which beat the ground. Recommendations based on the tests are presented. These investigations were made at Carnegie Institute of Technology. Earlier reports on the Rotaflail are PB 11206 and PB 11207, on this page and p. 701, respectively.

CONKLING, L. J. Irritant hand grenade (CN-DM) M6 (fast CN-DM irritant candle M1). (Chemical Warfare Service. Edgewood Arsenal Technical Report, E.A.T.R. 151). Off. Pub. Bd., Report, PB 6313. 1933. 25 p. Price: Microfilm-50¢ - Photostat-$2.00
Samples were prepared and tested for quantity of DM evolved, for physiological effect and for mask penetration. Photographs, blueprints and tables are included.

FACTORY MUTUAL RESEARCH CORPORATION. Comparison tests of hand incendiaries. (OSRD Report 257). Off. Pub. Bd., Report, PB 5253. 1946. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a description of the burning tests made to compare the effectiveness of the "OSS time delay incendiary" and the M-1 Harvard incendiary. The structures on which the tests were made were of 7/8 inches spruce boards, all the wood having been soaked in water for two hours before the tests.

FAIRCHILD, A.C. Smoke pot projector. (Technical Command Informal Report, T.C.I.R. 101). Off. Pub. Bd., Report, PB 3023. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Gives a description of the construction and operation of a smoke pot projector developed for use on armored force vehicles. The projector was very simply made of a short piece of 5" o.d. steel pipe, cut off at 45° and welded to a 3/8" steel plate. A 1-¼" hole was made in the back plate centered on the axis of the barrel. This hole was threaded and a plug provided for it with a 1/8" hole for the leads of an electric switch. The projectile used was a single cannister of the type used in the 155 mm. base ejection shell. Tests showed that this projector gave satisfactory performance. Photographs included.

GUNTHER, ROBERT C. and SZELIG, HERMAN S. Preliminary study of the preparation and properties of ground napalm. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. M.I.T.M.R. 183). Off. Pub. Bd., Report, PB 7945. 1945. 82 p. Price: Microfilm-$1.00 - Photostat-$6.00
Napalm was reduced in particle size by grinding in a Mikropulverizer and also in a Fitzpatrick Comminuter. Ground napalm, unless treated with an antiagglomerant, caked badly on storage at elevated temperatures. Samples of napalm made by all manufacturers were ground with tricalcium phosphate, the most satisfactory antiagglomerant found in a preliminary search, and the ground products were subjected to prolonged storage tests. Dispersion studies with ground soaps indicated that napalm cannot be ground to perform satisfactorily at both low and elevated temperatures. Gels from ground (containing antiagglomerants) and unground soaps were fired from the M2-2 portable flame thrower. No. difference in performance was observed. Tables, graphs and photographs are given.

LIVINGSTON, S. and RINKENBACH, WM. H. Characteristics of tetrytols. First and final report. (Picatinny Arsennal Technical Report 1500). Off. Pub. Bd., Report, PB 9592. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
A report of the characteristics of three tetrytol compositions containing 65, 70, and 75 percent of tetryl as compared with tetryl and TNT, when used in ammunition. It was found that the tetrytol compositions are intermediate between tetryl and TNT with respect to sensitivity, explosion temperature, and hygroscopicity; the compositions approaching tetryl more closely than TNT with respect to sensitivity, brisance, and rate of detonation. Stability and storage tests indicate tetrytol to be of a high order of stability.

MCBAIN, J.W. and others. Fundamental studies on aluminum soaps. (Progress reports to National Defense Research Committee. Nov. 15, 1943 to May 15, 1945.) Off. Pub. Bd., Reports, PB 4631, 5278-5284, 5885-5889, 5961, 5965-5967, 5971

		Price				Price	
PB	Pages	Microfilm	Photostat	PB	Pages	Microfilm	Photostat
4631	15	$0.50	$1.00	5886	41	$0.50	$3.00
5278	24	.50	2.00	5887	80	1.00	6.00
5279	15	.50	1.00	5888	57	1.00	4.00
5280	32	.50	3.00	5889	175	2.00	12.00
5281	12	.50	1.00	5961	19	.50	2.00
5282	29	.50	2.00	5965	42	.50	3.00
5283	8	.50	1.00	5966	8	.50	1.00
5284	11	.50	1.00	5967	50	.50	4.00
5885	244	2.50	17.00	5971	46	.50	4.00

These reports are monthly progress reports to Division 11 of the National Defense Research Committee research at Stanford University. PB 5889 is a summary of one year's work

dated Oct. 3, 1944, and PB 5885 covers the period July 1944-Dec. 1944. These reports present data on chemical and physical properties of aluminum soaps, napalms, properties of the gels they form with gasoline and hydrocarbons, use of peptizers, protective colloids, metallic sodium, etc., to maintain the gels. Preparation of aluminum soaps from pure fatty acids is described, and their properties discussed.

MILLER, C. E. Desensitization of "Black deposit" on M50 bomb bodies. (Technical Command Informal Report, T.C.I.R. 143). Off. Pub. Bd., Report, PB 5011. 1944. 32 p. Price: Microfilm-50¢ - Photostat-$3.00
Report of experiments to develop a method for the removal or desensitization of a black pyrophoric deposit occurring on the inner and outer walls of the M50 incendiary bomb and to determine the composition of this deposit. The ultimate object was to develop a treatment by which the bombs so affected could be reclaimed. Chemical treatment was found to be unsatisfactory, and heating at 375 - 455° C. in a current of SO_2 for varying lengths of time did not completely desensitize the black deposits. Sandblasting entirely removed the deposits. One important factor to consider in the use of such a method would be changes in dimensional tolerances which might result from the sand particles striking the soft magnesium alloy.

RODEBUSH, W. H. and others. "Screening smokes" Report (OSRD Report 940). Off. Pub. Bd., Report, PB 8080. 1942. 183 p. Price: Microfilm-$2.00 - Photostat-$13.00
This is a progress report under contract with the University of Illinois, Columbia University and General Electric Company. It summarizes recent work on screening smokes, including a resume of the theoretical background, a discussion of the development of various types of generators, a description of the field tests on certain units, and a consideration of conditions affecting the use of smoke generators. Diagrams, graphs, photographs and tables are included.

ROUILLER, CHARLES A. 4-In. chemical mortar MI, complete with ammunition, accessories and transportation equipment. Final report on Project B 1.2-1. (Chemical Warfare Service. Edgewood Arsenal Technical Report, E.A.T.R. 176). Off. Pub. Bd., Report, PB 6324. 1934. 22 p. Price: Microfilm-50¢ - Photostat-$2.00
Detailed information regarding this mortar and its accessories is given. The chief shortcomings of this weapon are its short range, inaccuracy of fire, and insufficient mobility. Attempts to increase the range and accuracy of fire have resulted in the development of the 4.2 in. chemical mortar, and the problem of other shortcomings of the weapon is being attacked under various projects for the 4.2-in. mortar. See also PB 6323.

ROUILLER, CHARLES A. 4.2-In. chemical mortar, MI, complete with accessories, ammunition and transportation equipment. Final report on Project B 1.2-2. May 31, 1934. (Chemical Warfare Service. Edgewood Arsenal Technical Report, E.A.T.R. 178). Off. Pub. Bd., Report, PB 6323. 1934. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
This report covers development work from 1924 to date of this chemical mortar, its accessories, etc., and also discusses its shortcomings. A description of the complete assembly is included. See also PB 6324 for earlier report.

SILVER, S. D. Gassing chamber for human tests; construction and operation. (Chemical Warfare Service. T.R.L.R. 47). Off. Pub. Bd., Report, PB 11561. 1944. 22 p. Price: Microfilm-50¢ - Photostat-$2.00
The design, construction and performance of a constant flow gassing chamber for determining toxicities of chemical warfare agents is described. It functions automatically with variations in concentration (when H is used) of less than ten percent for extended periods of time. Tables, photographs, diagrams and graphs are included.

STANDARD OIL DEVELOPMENT COMPANY. Collected monthly reports from N.D.R.C. contracts on incendiaries and flame throwers, covering the period April 15, to May 15, 1943. Off. Pub. Bd., Report, PB 5254. 1943. 35 p. Price: Microfilm-50¢ - Photostat-$3.00
A collection of monthly progress reports containing information on the following subjects: Development of oil incendiaries, evaluation of incendiaries in sub-attic rooms, development of incendiary bombs, the use of polymers and of aluminum soaps for thickening gasoline; studies of thickened liquids; work on vesicants, incendiary gels; development of flame throwers; and field tests on flame throwers.

TEARE, B. R., JR. Model study on the Rotaflail: First report. (OSRD Report 3023). Off. Pub. Bd., Report, PB 11207. 1943. 25 p. Price: Microfilm-50¢ - Photostat-$2.00
This is the first report dealing with the study of a mechanical mine exploder consisting of a drum carrying chains or cables. The drum rotates and at the same time moves forward at such speed that its bottom point has a small forward velocity with respect to the ground while the flails beat the ground on both sides of the drum. The report gives the first results obtained from an experimental model which was studied at Carnegie Institute of Technology. For later reports see PB 11206 and PB 11208 reported on p. 700.

TEXAS COMPANY. BEACON LABORATORY. Development of incendiary fuels. (OSRD Report 3762). Off. Pub. Bd., Report, PB 5242. 1944. 88 p. Price: Microfilm-$1.00 - Photostat-$6.00
This is a report of experiments the primary object of which was the development of a hydrocarbon gel filling for the E-9, 45 lb. tail ejection indendiary bomb. However, the test methods used and many of the results are of general interest to those concerned with oil incendiary bombs. Some notable conclusions are (a) cellucotton is preferred to gels as a bodying means, (b) high B.T.U. materials such as turpentine, toluene and lube oil extract are preferred to gasoline, (c) additions such as magnesium powder or ammonium nitrate are desirable in relatively small percentages.

WALKER, ROBERT C., JR. Suitability test of armored RP-63C airplane and the T-44 frangible bullet as testing and training equipment. (Army Air Forces Board, Orlando, Florida. AAF Board Project 4574R471). Off. Pub. Bd., Report, PB 6501. 1945. 36 p. Price: Microfilm-50¢ - Photostat-$3.00
The armored RP-63C airplane, designed to be used as a "live" target for aerial gunners, is to simulate combat maneuvers in attacking specially equippped bombing aircraft, using frangible bullets of powdered lead and phenolic resin binder. A sperry hit-recorder and indicating system is installed in each RP-63C and amplifiers permit hits to be transmitted to a recorder and an indicator light, enabling the gunner to determine immediately whether he is hitting. It would be desirable that a frangible bullet be developed which would have more nearly the trajectory of the standard caliber .50 bullet, and still be defeated by the armor of the RP-63C. Firing on the plane has been done from all gun positions aboard the bomber, with the exception of the nose. No serious damage has been done to the plane in over 400 missions. Tests were conducted by AAF Central School for Flexible Gunnery, Laredo, Texas.

WOODHOUSE, JOHN C. and others. Storage characteristics and stabilization of Levinstein H. (OSRD Report 3179). Off. Pub. Bd., Report, PB 6803. 74 p. Price: Microfilm-$1.00 - Photostat-$5.00
Formal report to January 1, 1944. It summarizes the results obtained over a period of one year in the laboratories of du Pont Grasselli Chemicals Department. The work here outlined was useful in differentiating between the factors which cause sludge development on storage of Levenstein H and those which cause pressure development. A convenient apparatus and procedure for carrying out an accelerated test of degradation of Levenstein H are described. The experiments cover a wide variety of approaches to the problem, including soluble additives, various washing procedures, as well as several types of surface treatment for steel containers. The best additive uncovered proved to be hexamethylenetatramine, first investigated by the Chemical Warfare Service, M.I.T. laboratory group. The best treatment for steel surfaces proved to be a Bakelite coating, although PVA and trisodium phosphate - sodium metasilicate-sodium dichromate mixture proved to be of interest. Report contains diagrams of the apparatus and tables and graphs showing results of the experiments.

PROFESSIONAL, SCIENTIFIC, AND CONTROLLING INSTRUMENTS, PHOTOGRAPHIC AND OPTICAL GOODS, WATCHES AND CLOCKS

British

NIERENBERG, RICHARD N. British 36" f/6.3 telephoto lens. (Army Air Forces. Engineering Division. ENG-59-341-413-11). Off. Pub. Bd., Report, PB 7642. 1944. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Subject lens performs slightly better than the now standard U.S. Army Air Forces 40" f/8 telephoto lens but is definitely inferior to the newly designed Bausch & Lomb 40" f/8 lens. Data relative to lens and tests are given.

German

GUELLICH, G. E., WHITE, JOHN and SAWYER, C. B. Report on questioning of Prof. Pohl, Prof. Nacken, Prof. Spangenberg, Prof. Joos, Prof. Gunther, Dr. Chytrek, et al., (artificial quartz crystals). (Report C-65). Off. Pub. Bd., Report, PB 6498. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Prof. Pohl developed the method of growing synthetic alkali halide crystals that was used by Zeiss, Steinheil and others. This method appears to have several advantages over the American one and is briefly described. Prof. Nacken produced crystals of quartz of 1 inch length, using a seed crystal on a platinum wire, suspended above a saturated solution of amorphous quartz in water, near the critical point of water (325-350°C), in an autoclave having a temperature gradient from slightly below to slightly above the critical point of water. The autoclave was made of chrome molybdenum steel, with a pure silver living and silver gaskets. Other successful and partly successful methods are also given. Drawings mentioned were not present. Other piezo-electric and polarizing crystals are also discussed.

NIERENBERG, RICHARD N. German 75 cm. f/6.3 telephoto lens, serial no. Nr2643998. (Army Air Forces. Engineering Division TSEPL-4-680-81-2). Off. Pub. Bd., Report, PB 9923. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Subject lens performed better than the USAAF 40-inch f/8 and 40-inch f/5.6 telephoto lenses but it is inferior to the 40-inch f/5,48-inch f/6.3 and 36-inch f/8 telephoto lenses. Photographs included.

NIERENBERG, RICHARD N. Schneider-Gottingen, Aero-Xenon, 35 cm f/2.5 lens serial no. NR65860. (Army Air Forces. Engineering Division. TSEPL-4-680-81-3). Off. Pub. Bd., Report, PB 7326. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes tests made to determine the optical characteristics of this German lens intended for night photography. Lens is approximately equal in performance to the U.S. Army Air Forces Standard 12-inch f/2.5 lens. Tables and photographs.

RANGER, R. H. and GELBAUM, B. R. The Carl Bosch Laboratory of Berlin. (CIOS Item 1, File XXX-35). Off. Pub. Bd., Report, PB 6653. 1945. 72 p. Price: Microfilm-$1.00 - Photostat-$5.00
In order to provide a complete picture of the essential elements of infra-red telescopes, a joint report on their research and manufacturing is given. Increased sensitivities were accomplished by the use of a spongy colloid to support the Caesium photo-sensitive surface. Sensitivities of fifty times normal have been accomplished by this process in given spots on the surface. The development of the image-transformer apparatus (Bildwandlergerat) is described; the technique is applicable to photocells. Details are given on the production of fluorescent screens by the Ecranol soluble glass, and casein processes, etc. By the use of dicyanines, sensitivity much further towards the long infra-red was accomplished. By-products of the development include a very fine water filter and the construction of a very neat high voltage source. To provide a reticle in the Bildwandler, Dr. Bosch projected an image of a microfilm of a sight by a small lens system directly on the front of the infra-red sensitive surface of the tube. Diagrams and photographs are included.

STIRLING, C. and others. Carl Haas, Schramburg. Makers of hair springs for clocks, watches and instruments (M.A.P., Group 2). (B.I.O.S. Evaluation Report 291). Off. Pub. Bd., Report, PB 9548. 1945. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Only hair springs, in steel and iron ferrous alloys, are produced in this well laid out factory. There is a beryllium treated nickel iron alloy called Nivarex. No hardening and tempering is done. All hair springs go into service as cold rolled and stress relieved.

Italian

OTTICO MECCANICA, ITALIANA E RILEVAMENTI AEROFOTOGRAMMETRICI, ROME. Nistri aerophotogrammetric surveying cameras and cartographic instruments, descriptive catalogues. Off. Pub. Bd., Report, PB 3529. 1940-41. 84 p. Price: Microfilm-$1.00 - Photostat-$6.00
Three catalogues of this Italian firm containing descriptions, photographs, and diagrams of its products as follows: 1. The "Nistri" aerophotogrammetric surveying cameras and cartographic instruments. In English and Italian. n.d. 33 p.; 2. The stereografometro "Nistri", 1940., in Italian, 20 p.; 3. The fotomultiplo "Nistri", 1941, in Italian, 25 p. The pamphlets are accompanied by four pages in Japanese.

Japanese

MATTESON, W. J. Captured enemy materiel: Tester gage, pressure and vacuum, with case (Japanese). (Army Engineer Corps. Engineer Board Rep. 283). Off. Pub. Bd., Report, PB 9661. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes Japanese pressure and vacuum tester gage with a case. It consist of a small hand operated vane type compressor and a vacuum gage panel mounted in a wooden case. Two photographs are included.

MATTESON, W. J. Report on captured Japanese equipment. (Army Engineer Corps. Engineer Board Rep. 128). Off. Pub. Bd., Report, PB 7250. 1944. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
The captured material covered in this report consists of six miscellaneous tripods; four have wood extension legs with metal heads and leg shoes, and two are constructed entirely from metal and are extension leg type. One of the metal tripods was used for supporting a small range finder. The other tripods were used for supporting surveying instruments. Photographs of the tripods, carrying cases and the nameplates and markings appearing on them are attached.

United States

AUGUST, A. C. W-10 Sonne continuous printer. (Army Air Forces. Engineering Division. ENG-59-681-99-4). Off. Pub. Bd., Report, PB 9945. 1944. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Enumerates the tests conducted with the above mentioned printer. Photographs included.

BALCOMB, CARL B. Cameras and projectors, still. (Army Air Forces. Engineering Division. TSEPL-4-681-128-11). Off. Pub. Bd., Report, PB 10079. 1945. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Purpose of the report is to close out expenditure order on above subject.

BALCOMB, S. P. and FULLERTON, RICHARD D. Cold weather test of the type N-5 kit, 16 mm. motion picture film field processing. (Army Air Forces. Engineering Division. TSEPL-4-681-158-1). Off. Pub. Bd., Report, PB 7547. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The above kit is satisfactory for field use in cold weather climate if operating temperatures are maintained above + 60°.

BALCOMB, CARL B. Stereoscopic motion pictures. (Army Air Forces. Engineering Division. ENG-M-59-681-81-5). Off. Pub. Bd., Report, PB 10022. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report summarizes the investigations made in the field of three dimension picture devices.

BARBER-COLMAN COMPANY, ROCKFORD, ILLINOIS. Report on computing sight, T-62, for National Defense Research Committee. Off. Pub. Bd., Report, PB 6710. 1944. 78 p. Price: Microfilm-$1.00 - Photostat-$6.00
The pilot model of the computing sight, T-62, was constructed to determine the practicability of mechanical fire control equipment for use with self-propelled antitank weapons. A complete description of the mechanics and the operation of the sight are given in Appendix A. The sight was tested at the Barber-Coleman laboratory and at Aberdeen Proving Grounds and Camp Hood, Texas. A table of the various tests and reports of tests are included. The tests of the pilot model showed that such a sight would be a definite aid to increased firing accuracy for antitank weapons. However, it was found that the sight in its present form is not satisfactory for general service. The changes as recommended can be accomplished if the computing sight is redesigned. Diagrams and photographs included.

BECKER, H. W. Continuous illumination for low-flying night photography. (Army Air Forces. Engineering Division. ENG-59-676-31-1). Off. Pub. Bd., Report, PB 7570. 1943. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
It was concluded that there was a possibility that satisfactory strip pictures could be made at night but since there is no requirement for this type of photography no further work was to be done on it at that time.

BECKER, H. J. Report on tests made on timing mechanism of the Type A-6A printer. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-82-6). Off. Pub. Bd., Report, PB 10047. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests show that the calibration of this timer is very much in error. Test data in the appendix.

BRIDGEWATER, HERBERT L. Cemented polaroid glass filters. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-41-10). Off. Pub. Bd., Report, PB 7571. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Cemented glass filters made from selected plate glass by Polaroid Corporation can be classed as type II filters and because of shortage of type III filters are considered as satisfactory for use on aerial cameras of 12-inch focal length or less, provided these filters are tested for resolution at the manufacturers plant, and carefully selected. Test data included.

BRIDGEWATER, H. L. Cemented glass filters. (Army Air Forces. Engineering Division. ENG-59-680-52-11). Off. Pub. Bd., Report, PB 7543. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Cemented glass filters made by Harrison and Harrison did not satisfy Army Air Forces requirements.

BRIDGEWATER, H. L. Effects of heated air on aerial camera resolution. (Army Air Forces. Engineering Division. TSEPL-4-680-73-4). Off. Pub. Bd., Report, PB 10077. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes tests conducted to determine effect on resolution of aerial camera lenses when a stream of heated air is blown between camera lens and airplane window.

BRIDGEWATER, H. L. Filters for Army Air Forces photographic purpose. (Army Air Forces. Engineering Division. TSELA-4D-680-52-23). Off. Pub. Bd., Report, PB 7521. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Summarizes the development, study and testing covered on the above subject. Activities have been reported in Memorandum Reports No. ENG-59-680-52-1 to ENG-59-680-52-22).

BRIDGEWATER, H. L. Front surface mirrors. (Army Air Forces. Engineering Division. TSEPL-4-680-73-3). Off. Pub. Bd., Report, PB 7889. 1945. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Eight 2" glass plates were given a front surface coating of chromium.

BRIDGEWATER, H. L. Infra-red filters. (Army Air Forces. Engineering Division. ENG-59-680-58-21). Off. Pub. Bd., Report, PB 7522. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report approves the Bausch & Lomb 5 3/4 inch solid glass infra-red filter for Army Air Forces use. Curve of transmittance is included. Will not reproduce well.

BRIDGEWATER, H. L. Neutral density gelatin filters. (Army Air Forces. Engineering Division. ENG-59-680-52-12). Off. Pub. Bd., Report, PB 7542. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The neutral density gelatin filters submitted by the Defender Photo Supply Company matched the optical and spectral performance of corresponding Wratten filters.

BRIDGEWATER, HERBERT L. Service tests on correction filters for the 6-inch metrogon lens. (Army Air Forces. Engineering Division. ENG-M-59-680-54-1). Off. Pub. Bd., Report, PB 7577. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Aerial photographic tests indicate that correction filters for the 6-inch metrogon lens can satisfactorily eliminate the "hot-spot" on metrogon negatives. The corrected metrogon negatives can be readily printed on standard printers, eliminating the need for a special printer like the A-10 for such negatives.

BRIDGEWATER, H. L. Service tests on correction filters for the 6 inch metrogon lens. (Army Air Forces. Engineering Division. ENG-59-680-54-2). Off. Pub. Bd., Report, PB 7517. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Sufficient aerial service tests have been made to satisfactorily determine the effectiveness of this vignetting-correction filter in eliminating the hot spot from the center of metrogon negatives, and thereby simplify the printing of such negatives by Army Air Forces field personnel.

BRIDGEWATER, H. L. Solid glass filters. (Army Air Forces. Engineering Division. ENG-59-680-52-20). Off. Pub. Bd., Report, PB 7523. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes the tests conducted on the A-6 filter units supplied for use on K-17 and K-18 24 inch f/6 aerial cameras. Only three of the twenty filters were found to be suitable.

BRIDGEWATER, H. L. Solid glass filters. (Army Air Forces. Engineering Division. ENG-59-680-52-21). Off. Pub. Bd., Report, PB 7524. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Reports results of tests on twenty-two resurfaced 5 3/4 inch yellow glass filters submitted by Eastman Kodak Company. Approves filters of this quality for Army Air Forces use.

BRIDGEWATER, H. L. Solid glass filters. (Army Air Forces. Engineering Division. ENG-59-680-52-16). Off. Pub. Bd., Report, PB 7538. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes the testing of 5 3/4 inch yellow glass filters as currently made by Bausch & Lomb and Eastman for the 24" f/6 K-17 aerial cameras. The effect of the filters on resolving power of the lens is given in the appendix.

BRIDGEWATER, H. L. The type A-1 filter mount. (Army Air Forces. Engineering Division. ENG-M-59-680-52-15). Off. Pub. Bd., Report, PB 9974. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this report was to discuss the development of a suitable filter mount for use on the 24-inch K-17 and K-18 aerial cameras installed in photographic airplanes where the standard A-6 filter unit cannot be used.

BRIDGEWATER, H. L. Vignetting-correction filters for the Metrogon lens. (Army Air Forces. Engineering Division. ENG-59-680-52-8). Off. Pub. Bd., Report, PB 7520. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A 2 3/8 inch diameter, 24-point petal shaped metallic coated pattern was placed by Evaporated Metal Films Corporation on the surface of a cemented red filter of 3 15/16 inch diameter made by Polaroid of correction for Metrogon negatives when the coating has a nominal value of 21% transmission. To facilitate mass production of such filters, a tolerance of from 17% to 25% is satisfactory.

BRIDGEWATER, H. L. Visits to manufacturers re: Vignetting correction filters. (Army Air Forces. Engineering Division. ENG-59-680-52-7). Off. Pub. Bd., Report, PB 7535. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The report records the results of visits to Polaroid, Defender, Evaporated Metal Films, Bausch & Lomb and Eastman.

BRIDGEWATER, H. L. Waterproof lacquered gelatin filters. (Army Air Forces. Engineering Division. TSEPL-4-680-73-5). Off. Pub. Bd., Report, PB 7532. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This test indicated that the waterproof lacquered gelatin sheet filters made by the Defender Photo Supply Co. were superior to unlacquered gelatin sheet filters.

CARSON, KENNETH. Conference re plastic lens, development and lens mounts and barrels. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-48-1). Off. Pub. Bd., Report, PB 7622. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report summarizes conferences with Thomas S. Curtis and Del Riccio concerning plastic lenses and the Harrison Optical Company regarding lens mounts and barrels.

CHAFEE, ARTHUR. Quickwork processing and printing with Sonne printer. (Army Air Forces. Engineering Division. ENG-59-681-107-1). Off. Pub. Bd., Report, PB 10090. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes the tests that were made to determine the length of time necessary to produce First Phase Interpretation prints from exposed aerial films. The test proved thatthe time could be reduced from the one hour and thirty minutes to four hours reported by the various theatres to forty-five minutes. It was felt that with two experienced operators prints could be consistently delivered in thirty-five minutes from the time the film was taken into the laboratory.

CHILDRESS, H. L. Aerial film identification stamping machine. (Army Air Forces. Engineering Division. ENG-59-681-59-4). Off. Pub. Bd., Report, PB 7678. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report enumerates certain changes to be made in the type A-3 stamping machine to make it more suitable for Army Air Forces use.

CHILDRESS, H. L. Beattie process camera company's model V-16 20" x 24" contact printer. (Army Air Forces. Engineering Division. ENG-59-903-10). Off. Pub. Bd., Report, PB 10045. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes in detail the subject printer. The Beattie V-16 is not suitable for use in the Air Forces because of its excessive weight and certain special parts which would be difficult to maintain.

CHILDRESS, H. L. Contact test for contact printers. (Army Air Forces. Engineering Division. ENG-59-681-82-11). Off. Pub. Bd., Report, PB 10082. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this study was to determine a satisfactory method for testing contact printers to determine whether or not they give the proper contact required for Air Forces. The test which was devised is described in detail in the appendix. This report will not reproduce well.

CHILDRESS, H. L. First production model of the type B-11 projection printer made by the Eastman Kodak Company. (Army Air Forces. Engineering Division. ENG-59-681-63-6). Off. Pub. Bd., Report, PB 10083. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The production model of the B-11 printer is a duplicate of the experimental model. It is not rigid and vibrates excessively but since complete redesign would be needed to eliminate this and since there is an urgent need for these printers in the field it is recommended that the printers be accepted for Air Forces use.

CHILDRESS, H. L. Machine, stamping, aerial film identification. (Army Air Forces. Engineering Division. ENG-M-59-681-59-2). Off. Pub. Bd., Report, PB 9929. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Report deals with progress of the development of stamping machines for identification of aerial film. More wheels are needed to print the information desired. Photographs included. First two pages will not reproduce well.

CHILDRESS, H. L. Machine, stamping, aerial film identification. (Army Air Forces. Engineering Division. ENG-59-681-59-3). Off. Pub. Bd., Report, PB 7569. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes a stamping machine which was developed to place identifying information on aerial roll film.

CHILDRESS, H. L. Modulating contact printer. (Army Air Forces. Engineering Division. ENG-M-59-681-83-1). Off. Pub. Bd., Report, PB 9946. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
The modulating contact printer manufactured by the Photogrammetric Instruments Company, Pasadena, California, as submitted was found not suitable for Army Air Force use. Photographs included. Text will not reproduce well.

CHILDRESS, H. L. Modulating contact printer. (Army Air Forces. Engineering Division. ENG-59-681-83-6). Off. Pub. Bd., Report, PB 10050. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests indicate that the subject printer is not suitable for Air Forces use.

CHILDRESS, H. L. Study of A-6A, A-13, and A-14 contact printers. (Army Air Forces. Engineering Division. ENG-M-59-681-82-7). Off. Pub. Bd., Report, PB 10046. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The 0.070 "thick pneumatic rubber air bag was found more satisfactory for use on these printers than the 0.050" thick rubber air bag. The thicker bag gave good contact over the area which it covered. However, a larger platen frame was necessary.

CIRCOSTA, ROBERT S. Pictures through glass or plexiglass. (Army Air Forces. Engineering Division. ENG-59-675-39-5). Off. Pub. Bd., Report, PB 10049. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The type and quality of glass to be installed over camera openings in aircraft is dependent upon the focal length of the camera, and the angle of obliquity between the normal to the glass and the camera optical axis.

COLTON, EDWARD. Approval of "Kodabromide" enlarging paper. (Army Air Forces. Engineering Division. TSEPL-4-680-62-19). Off. Pub. Bd., Report, PB 10015. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Kodabromide proves to be more desirable than the Royal Bromide currently being supplied the Army Air Forces by Eastman. Comparative sensitometric data on the two papers appear in the appendix.

COLTON, EDWARD. Brittleness test for photographic film. (Army Air Forces. Engineering Division. ENG-59-680-23-37). Off. Pub. Bd., Report, PB 7513. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes the standard Army Air Forces test for measuring the brittleness of photographic film.

COLTON, EDWARD. A continuously variable filter for a variable contrast photographic paper. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-22-3). Off. Pub. Bd., Report, PB 7578. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes a continuously variable filter for Varigam photographic paper. Illustrations are missing.

COLTON, EDWARD. Defender Company plastic safelight filters. (Army Air Forces. Engineering Division. TSEPL-4-680-63-2). Off. Pub. Bd., Report, PB 7533. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
A series of six safelight filters consisting of two sheets of lucite with a sheet of dyed gelatin and a sheet of diffusing paper sandwiched between were tested for compliance with AAF specifications. Test results are given in the appendix.

COLTON, EDWARD and OWEN, CALVIN,P. Duplication of aerial negatives. (Army Air Forces. Engineering Division. ENG-59-680-56-14). Off. Pub. Bd., Report, PB 9973. 1944. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes two methods of duplicating aerial negatives using the Sonne continuous printer. Positive-negative method is recommended for precise requirements. When detail is not very important the Direct Copy method is recommended. Processing and resolving power data are given in the appendices.

COLTON, EDWARD. Dye-sensitized materials. (Army Air Forces. Engineering Division. ENG-59-680-57-2). Off. Pub. Bd., Report, PB 7869. 1944. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Considerable work has been done to investigate sensitometric and keeping properties of dye sensitized materials but more study will be carried on under a new expenditure order.

COLTON, EDWARD Elimination of fog from out-dated photographic paper. (Army Air Forces, Engineering Division, ENG-59-680-62-11). Off. Pub. Bd., Report, PB 10037. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Effectiveness of the chemicals tested, as anti-fogging agents was much greater in the developer solution than in the pre-bath. Following chemicals were recommended for use in specified proportions with developer solution: (1) benzotriazole, (2) 6-nitro-benzimidizole nitrate, (3) pre-develop- hardener powders.

COLTON, EDWARD Incubation testing of Defender Type V photographic papers. (Army Air Forces, Engineering Division, ENG-59-680-62-7). Off. Pub. Bd., Report, PB 10036. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Defender Type V emulsions showed excessive fog after incubation for 7 and 14 days at 120°F. Eastman check sample showed no gain in fog when subjected to same test.

COLTON, EDWARD. Measurement of widths of gun camera films. (Army Air Forces. Engineering Division. TSEPL-4-680-62-13). Off. Pub. Bd., Report, PB 7501. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Measurements of Eastman, Dupont, and Ansco 16 mm. gun camera films proved that all films are in close agreement, both

COLTON, EDWARD. Night test of new hypersensitized infra-red aerial film. (Army Air Forces. Engineering Division. ENG-59-680-55-2). Off. Pub. Bd., Report, PB 10060. 1943. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Negatives obtained using the new hypersensitized infra-red aerial film with the M-46 photoflash bomb were judged to be appreciably superior to those obtained from Class N aerial film, the regular night aerial photographic film, in contrast and speed.

COLTON, EDWARD. Sensitometric studies and investigation of photographic papers, plates and films. (Army Air Forces. Engineering Division. TSEPL-4-680-62-24). Off. Pub. Bd., Report, PB 10017. 1945. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Enumerates various studies conducted under expenditure order no. 680-62.

COLTON, EDWARD. Sensitometric study of variable contrast photographic papers. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-25-1). Off. Pub. Bd., Report, PB 9981. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Defender's Varigam and Eastman's multi contrast photographic papers were tested. Varigam when used with fast Varigam filters was found satisfactory. The Eastman multicontrast paper was not found satisfactory.

COLTON, EDWARD. Sensitometric test of a prehardened aerial film. (Army Air Forces. Engineering Division. ENG-59-680-23-32). Off. Pub. Bd., Report, PB 7515. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This test of an Eastman pre-hardened aerial film showed that the film retained its "hardness" properties at elevated temperatures which cause the check film to soften.

COLTON, EDWARD. Sensitometric tests of H.E.S. addition agent for developing aerial films. (Army Air Forces. Engineering Division. ENG-59-680-53-4). Off. Pub. Bd., Report, PB 7516. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The investigation showed that no advantage was gained from the use of H.E.S. addition agent to D-19 with Type 1 classes A, K, or L aerial film. Test data are in appendix.

COLTON, EDWARD. Sensitometric tests of photographic papers submitted by the Haloid Company. (Army Air Forces. Engineering Division. ENG-M-59-680-22-12). Off. Pub. Bd., Report, PB 9978. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
All samples fall within Army Air Forces specifications.

COLTON, EDWARD. Shrinkage test of photomechanical films. (Army Air Forces. Engineering Division. TSEPL-4-680-62-14). Off. Pub. Bd., Report, PB 7502. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
There was no significant difference between the percentage shrinkage of the low shrink and regular base photomechanical films of either Eastman Kodak Company or Ansco Company.

COLTON, EDWARD. Shrinkage test of Type IX photographic paper suitable for mosaics. (Army Air Forces. Engineering Division. ENG-59-680-22-17). Off. Pub. Bd., Report, PB 10031. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Water resistant base photographic paper was tested for shrinkage. Type IX "Suitable for Mosaics" showed slightly less shrinkage than Type I paper.

COLTON, EDWARD. Study of class N aerial film returned from the European theater of operations. (Army Air Forces. Engineering Division. TSEPL-4-680-66-2). Off. Pub. Bd., Report, PB 7546. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Aerial film about nine months beyond its expiration date had decreased from Weston 200 to 120. Lack of proper storage was indicated as the cause of loss of speed and contrast of this film.

COLTON, EDWARD. Test of films submitted by the Defender Photo Supply Co. (Army Air Forces. Engineering Division. ENG-M-59-680-23-18). Off. Pub. Bd., Report, PB 7389. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests by the Photographic Laboratory, AAF Materiel Command of seven types of film submitted by the Defender Photo Supply Co. for AAF use. Tests proved satisfactory.

COLTON, EDWARD. Test of Haloid type IX photographic paper. (Army Air Forces. Engineering Division. ENG-59-680-22-4). Off. Pub. Bd., Report, PB 9977. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Haloid Company is approved as a source of type IX photographic paper. Development data is given in appendix.

COLTON, EDWARD. Test of 35 mm negative films. (Army Air Forces. Engineering Division. ENG-59-680-62-1). Off. Pub. Bd., Report, PB 7512. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The test indicated that in most cases when emulsion speed was lower than that required for its emulsion class, the film was beyond its expiration date.

COLTON, EDWARD. Test of water-resistant base photographic papers. (Army Air Forces. Engineering Division. ENG-59-680-22-15). Off. Pub. Bd., Report, PB 10029. 1943. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were made at the Photographic Laboratory, Wright Field and at Eastman Kodak Co. Procedure was to determine weight of papers dry, after processing, and at definite time intervals thereafter. Tests were also made with prolonged washing, and chemical determination of residual hypo content was used as an index of moisture absorption. In tests based on normal processing procedures, Haloid and Eastman regular water-resistant base papers were found superior to Defender paper, but the "Hypo retention" test showed Defender and Eastman papers superior to Haloid.

COLTON, EDWARD. Ultra-speed films for night photography. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-32-1). Off. Pub. Bd., Report, PB 10041. 1942. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Sensitometric tests were made of several high speed films. Eastman regular Tri-X Pan and Agfa Special A.C.Pan were found suitable for night photography. Film with a white translucent base, such as Eastman matte Tri-X Pan, showed no advantages. Sensitometric curves are given.

COLTON, EDWARD. Unsatisfactory report on Eastman Kodak Type IX photographic paper. (Army Air Forces, Engineering Division, ENG-59-680-62-5). Off. Pub. Bd., Report, PB 10034. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Emulsion came loose from the paper upon processing due to a skip in the coating of the sub or adhesive layer which causes the emulsion to adhere to the paper base. The company agreed to replace all such defective material.

COLTON, EDWARD. Use of gum arabic with type IX photographic paper. (Army Air Forces. Engineering Division. ENG-M-59-680-22-11). Off. Pub. Bd., Report, PB 9987. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
For mounting prints made on water-resistant base photographic paper, type IX with gum arabic, it is recommended that acetone be applied to the back surface of the print to remove the thin coating of waterproofing material whenever difficulty is experienced in the adhesion of the print to the mounting.

COLTON, EDWARD. Variable contrast photographic paper. (Army Air Forces, Engineering Division, ENG-59-680-22-16). Off. Pub. Bd., Report, PB 10027. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Plan was to use a variable contrast photographic projection paper and vary the contrast by changing filters. Papers submitted by Defender Photo Supply Co. and Eastman Kodak Co. were not satisfactory, since it was necessary to run the production printers at too slow a speed when filters were used. Neither paper was suitable for complete range from low to high contract negatives.

COLTON, EDWARD. Water absorption study of Type IX photographic paper. (Army Air Forces, Engineering Division, ENG-59-680-56-11). Off. Pub. Bd., Report, PB 10035. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
When recommended times in the fixing bath and in the wash bath were exceeded by large amounts there were relatively small increases in water absorption.

CROW, G. C., JR. Turbo supercharger regulator and flight engineer. (Army Air Forces. Engineering Division. ENG-M-54-656-650). Off. Pub. Bd., Report, PB 9846. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a memorandum report of a visit to the Minneapolis Honeywell Regulator Company to discuss possible changes and improvements in the turbo supercharger regulator and to plan the design and performance of an automatic flight engineer based on indicated air speed as a control element.

DIRCKSEN, A. D. Blackout filters for flashlight TL-122A. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-497). Off. Pub. Bd., Report, PB 10263. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of results of tests of blue blackout filters for flashlight Signal Corps type TL-122A. No tests were conducted with the blue service test blackout filters as recent tests by the Engineer Corps, Fort Belvoir, Virginia, show that blue light is unsatisfactory for blackout conditions. Blackout lights along these lines will be accomplished by means of red filters, or by the use of reduced voltage to operate the lamps at very low intensities. Flight tests were conducted using red blackout filters for use on flashlights for the bombadier. These filters proved satisfactory and are now specified on the Type C-4 cockpit lamp assembly.

DON, FREDERICK J. Application of aerial photographs to mapping. (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-4). Off. Pub. Bd., Report, PB 10052. 1940. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes tests of methods and materials used in a study of the application of aerial photographs to mapping.

ERBOUTH, P. and ASTON, J. G. Methods of production and calibration of combination vapor pressure and gas dial thermometers, to January 26, 1945. (OSRD Report 4780). Off. Pub. Bd., Report, PB 9376. 1945. 19 p. Price: Microfilm-50¢ - Photostat-$2.00
In this report the methods of construction and testing of the Bourdon Springs as well as the bulbs are described. These methods yield a thermometer which gives accurate readings with a single standard dial. The routine method of checking the final thermometers at certain fixed points is described as well as that for occasional complete calibrations of the instruments. This is a progress report under contract with University of Pennsylvania. Photographs, diagrams, and charts are included.

EVANS, E. C. Restitutional kit for type B-9 projection printer. (Army Air Forces. Engineering Division. TSELA-4D-681-121-3). Off. Pub. Bd., Report, PB 7593. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The auxiliary equipment which will make the B-9 projection printer capable of adjusting the slope plane of 9" x 9" aerial negatives will fill the present Army Air Forces requirements.

EVANS, E. C. Restitutional kit for B-9 projection printer. (Army Air Forces. Engineering Division. ENG-59-681-121-1). Off. Pub. Bd., Report, PB 7595. 1944. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
Summarizes the work done on an experimental restitutional kit for the B-9- projection printer by the J.G. Saltzman company and recommends that no procurement be made of the present type experimental kit. Teletypewriter messages relative to the kit are included in the appendix.

FARMEN, DONALD R. Dye-sensitized, dry-processing materials and processes involving special techniques. (Army Air Forces. Engineering Division. TSEPL-4-680-63-3). Off. Pub. Bd., Report, PB 7890. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
It is recommended that the present expenditure order on dye-sensitized, dry-processing materials and processes be closed out and a new expenditure order with modified scope be opened.

FARMEN, D. R. Antifogging agent for photographic papers. (Army Air Forces. Engineering Division. ENG-59-680-56-7). Off. Pub. Bd., Report, PB 10030. 1944. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Agent developed in the Soviet Union practically eliminated greenish tone produced by potassium bromide. However, it was necessary to expose three times as long and develop twice as long when it was used.

FARMEN, DONALD R. Investigation of an unsatisfactory report on Technical Order no. 10-5-20 (Rapid processing of aerial roll film). (Army Air Forces. Engineering Division. U-TSEPL-4-680-74-1). Off. Pub. Bd., Report, PB 7561. 1944. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
An unsatisfactory report stated that method I for processing aerial film was impracticable. The test found short lengths of film resulted in incomplete development and stopping.

FEICHT, ROBERT N. Collaboration with California Institute of Technology, Pasadena, California. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-15-13). Off. Pub. Bd., Report, PB 10058. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report merely announces that tests relative to photoflash powder development are to be conducted by California Institute of Technology.

FEICHT, ROBERT N. Conduct basic study of interrelations of cameras, emulsions, and illuminants for high aerial photography. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-20-7). Off. Pub. Bd., Report, PB 10042. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Work on this project has been subdivided and Expenditure Order closed.

FEICHT, ROBERT N. Conference at Picatinny Arsenal re photoflash powder mixtures. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-15-2). Off. Pub. Bd., Report, PB 10057. 2 p. Price: Microfilm-50¢-Photostat-$1.00
The conference discussed primarily a proposed program for the study of photographic effects of various photo flash powder mixtures.

FEICHT, ROBERT N. Investigation of photoflash powder. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-15-22). Off. Pub. Bd., Report, PB 10075. 1943. 32 p. Price: Microfilm-50¢ - Photostat-$3.00
Attached to this report is an investigation of possible modifications of the utilization of flash powder with the object of increasing the intensity obtained from a given charge of powder. This investigation was conducted by the California Institute of Technology. Curves and diagrams illustrate the report but plates are missing.

FEICHT, ROBERT N. Investigation of photoflash powders. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-15-21). Off. Pub. Bd., Report, PB 10076. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report deals with the test of ninety-five powder mixtures to discover which mixture is most satisfactory for Air Forces use.

FEICHT, ROBERT N. Night photographic tests. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-27-1). Off. Pub. Bd., Report, PB 9935. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This test indicates that a suitable adapter for M-23 and M23a photoflash bombs will permit their successful use at altitudes of at least 10,000 feet.

FEICHT, ROBERT N. Night photographic tests at Midland, Texas. (Army Air Forces. Engineering Division. ENG-59-675-106-1). Off. Pub. Bd., Report, PB 9943. 1943. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
The tests were conducted to obtain simultaneous night aerial photographs by several methods and with several different types of equipment to assist in evaluating their relative merits. Photographs included.

FEICHT, ROBERT N. Night photography under desert conditions. (Army Air Forces. Engineering Division. ENG-59-441-31-10). Off. Pub. Bd., Report, PB 10018. 1943. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were conducted to determine performance of night photographic equipment under desert weather conditions.

FEICHT, ROBERT N. Photoflash powder. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-15-18). Off. Pub. Bd., Report, PB 10055. 1941. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Technical problems relative to night aerial photography were discussed at a conference at Wesleyan University. No data given in report.

FEICHT, ROBERT N. Photoflash powders. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-15-23). Off. Pub. Bd., Report, PB 10056. 1941. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Conferences regarding tests, involving firing of large quantities of explosive mixtures, to be carried out by California Institute of Technology at Muroc, California, in which it was decided the Institute should submit a bid upon an amended invitation.

FEICHT, ROBERT N. Saltzman photographic enlarger. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-11-2). Off. Pub. Bd., Report, PB 10089. 1940. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes the Saltzman precision aerial enlarger and recommends that this printer should be used until several type B-9 projection printers have been procured. The Saltzman printer will need certain alterations before it conforms to Air Corps specifications.

FINK, R. L. Investigation of free air temperature measurements in B-29 aircraft. (Army Air Forces. Engineering Division. TSEPL-655-1426). Off. Pub. Bd., Report, PB 6976. 1946. 59 p. Price: Microfilm-$1.00 - Photostat-$4.00
Since variations in free air temperature indications occurred between the navigator's, flight engineer's and bombardier's free air thermometers on B-29 aircraft, an investigation was conducted to devise a means of correcting the faulty installation, to determine the dynamic heating correction of the thermometers and to study the effects of conduction, ventilation and radiation upon the accuracy of free air temperature measurements. Graphs and photographs are included.

GLICKMAN, LOUIS. Visit to Camp Campbell Army Air Base, Campbell, Kentucky. (Army Air Forces. Engineering Division. ENG-59-675-10). Off. Pub. Bd., Report, PB 10062. 1943. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Instructions were given to the 66th Reconnaissance Group in night aerial photography.

GRAB, HART F. Tests of Recordak projector. (Army Air Forces. Engineering Division. TSEPL-4-675-156-2). Off. Pub. Bd., Report, PB 9947. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
It was concluded that the subject projector could be used as a 35 mm. projector when modified as described in the appendix. Photograph.

GUMMER, CHARLES E. Tests of photographic color printing paper submitted by Vitachrome Film Corporation, 1150 Columbus Avenue, Boston, Massachusetts. (Army Air Forces. Experimental Engineering Section. EXP-M-59-677-14-1). Off. Pub. Bd., Report, PB 10010. 1940. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Subject material is not suitable for Air Corps use because of its inability to reproduce the colors of color transparencies with sufficient fidelity.

GUMMER, CHARLES E. The fading of dyes in color photographic materials. (Army Air Forces. Engineering Division. TSEPL-4-677-28-2). Off. Pub. Bd., Report, PB 7892. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Since the dyes used in Kodachrome, aerial Kodacolor film, Ansco color films and in most currently available color printing and duplicating materials are subject to fading it is recommended that those transparencies made in the tropics which should be preserved over a period of six or more months be duplicated and the originals stored in a cool, dark and dry place.

HANCOCK, JOHN A. Investigation of Type K-17 aircraft cameras and Type A-5 roll film magazine. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-33-1). Off. Pub. Bd., Report, PB 7682. 7 p. Price: Microfilm -50¢ - Photostat-$1.00
As a result of this investigation it is concluded that the K-17 camera using the A-5 magazine loaded with 150 feet of film has been operating successfully. Data relative to investigation in appendix.

HANCOCK, JOHN A. Morse model LS-2 lamphouse for use with the Type A-8 printer. (Army Air Forces. Engineering Division. ENG-59-681-105-1). Off. Pub. Bd., Report, PB 10044. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This lamphouse contains a 1500 watt incandescent light source cooled by means of a small blower. The light is projected through a window in the housing and onto a mirror located directly in front of the opening, thence down onto the large mirror in the base of the A-8 printer and thence to the negative surface for printing. A shutter controls the light beam, preventing afterglow.

HANDY, A. G. Anti-reflection coatings for photographic lenses. (Army Air Forces. Engineering Division. ENG-59-680-35-1A). Off. Pub. Bd., Report, PB 7667. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes two solutions originated by H.R. Moulton for coating photographic lenses. The U.S. Navy has widely adopted these coatings and the British government has evinced interest in them. Diagrams in appendix.

HANDY, A. G. Anti reflection coatings for photographic lenses. (Army Air Forces. Engineering Division. ENG-59-680-35-1). Off. Pub. Bd., Report, PB 7672. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A study was made of the Blodgett and Cartwright methods of coating lenses but it was decided that the present lens coatings as supplied in the 7" f/2.5 and 12" f/2.5 AAF lenses are entirely adequate.

HANDY, A. G. Camera alignment device. (Army Air Forces. Engineering Division. ENG-M-59-675-125-14). Off. Pub. Bd., Report, PB 9968. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes the construction and operation of an apparatus to align any number of cameras so that their optical axis are in a mutually parallel plane.

HANDY, A. G. Design of an optical system for a continuous printer. (Army Air Forces. Engineering Division. TSEPL-4-680-68-1). Off. Pub. Bd., Report, PB 10064. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes a device which provides a large quantity of actinic light incident perpendicularly, or nearly so, upon a rotating drum bearing a roll of exposed photographic film and, beneath it, emulsion to emulsion, a roll of photographic printing paper. It was concluded that manufacture of the device could not be undertaken at this time because of the inability of industry to manufacture a mercury arc lamp of suitable characteristics and because no other light source of sufficient constancy and luminous intensity can be had. Diagrams in the appendix.

HANDY, A. G. Determination of constants and distortion values of Bausch & Lomb 12" metrogon #7079 to determine its suitability as a projection objective in a restitutional printer. (Army Air Forces. Engineering Division. ENG-59-341-413-4). Off. Pub. Bd., Report, PB 7588. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
From test data and from a critical examination of various images formed by the lens system under carefully controlled conditions the distortion, chromatic aberration and curvature of field were all considered to be highly objectionable at angles of obliquity of the chief ray greater than 20° considering that the lens system was designed for the purpose of topographic mapping.

HANDY, A. G. Optical examination of laminated glass samples. (Army Air Forces. Engineering Division. TSEPL-4-680-65-2). Off. Pub. Bd., Report, PB 7885. 1945. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
Six samples of laminated plate glass from the Pittsburgh Plate Glass Company were tested to see if such glass could be used for photographic windows in pressure cabins. It was concluded that it is entirely possible to manufacture laminated plate glass that would meet the requirements of solid 3/4" photographic windows. Definitions of terms used in tables appear in the appendix but the tables themselves are missing. Figures illustrating various samples are included.

HELLER, ROBERT M. Aerial motion picture combat camera and camera mounts. (Army Air Forces. Engineering Division. ENG-59-681-114-3). Off. Pub. Bd., Report, PB 9975. 1943. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes work done on the problem of obtaining combat motion pictures from heavy bombardment airplanes. The 16 mm. G.S.A.P. camera was used for the project.

HELLER, R. M. Recordgraph sound-on-film recording machine. (Army Air Forces. Engineering Division. ENG-M-59-681-22). Off. Pub. Bd., Report, PB 9930. 5 p. Price: Microfilm -50¢ - Photostat-$1.00
Describes the Recordgraph machine which was investigated in an effort to find a machine suitable for use in aircraft during flight test. Photographs included.

HULBURT, E. O. Optics of searchlight illumination. (Naval Research Laboratory. Report R-2680). Off. Pub. Bd., Report, PB 10270. 1945. 27 p. Price: Microfilm-50¢ - Photostat-$1.00
This report analyzes the optical features of searchlight illumination. Measurements and calculations for the Navy 36 inch and the Army 60 inch searchlight led to the following results: x is the maximum visual range of an object illuminated by a searchlight at night viewed by an observer alongside the searchlight and at a distance from it. A homogeneous atmosphere and a small target are assumed. It was found that: (a) The range x of the object illuminated by the "near" side of the beam (the portion of the beam near the observer) is about 20 percent greater than when the object is illuminated by the "far" side of the beam for a clear atmosphere; with increase of haze the difference decreases; (b) for a clear atmosphere x increases about 25,50 and 75 percent when the observer moves from d-30 feet to 100, 200 and 500 feet, respectively; the percentage increases in x remain approximately constant with increasing haze; (c) the range x increases with the fourth root of the area and reflectivity of the illuminated object and with the eighth root of the candlepower of the searchlight, for a clear atmosphere; with increase of haze the increases of x are even less rapid. The general conclusion was reached that by means of the present detailed manner of calculation the effectiveness of a searchlight in revealing small objects can be calculated completely from the distribution curve of light in the searchlight beam. Diagrams, curves and photographs illustrate the report. There is a brief bibliography.

JACKSON, BRUCE. Radio noise on Weston tachometer commutator. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-477 H). Off. Pub. Bd., Report, PB 10163. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Reports noise level test on experimental model tachometer commutator of the Weston Electrical Instrument Corporation and recommends changes to lower the level for line noise voltage. Graph.

JACKSON, MARGERET M. and SKALLER, BERNARD. Calibration of the single-scale oximeter. (Army Air Forces. Engineering Division. EXP-M-49-696-16). Off. Pub. Bd., Report, PB 5153. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This memorandum reports the results of a check calibration of the single-scale oximeter. A six-unit single-scale oximeter was installed in a high altitude chamber. The oximeter circuit is a modification of the original Millikan apparatus and makes possible the continuous use of one scale for the arterial saturation readings of six subjects. In Appendix I comparisons are shown of oximeter readings with Van Slyke determination. Conclusions complete the report.

KATZ, AMROM H. Errors in photo interpretation due to tip, tilt, variable angle of attack of photographic aircraft, and other factors. (Army Air Forces. Engineering Division. ENG-59-680-60-5a). Off. Pub. Bd., Report, PB 7567. 1944. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
The report discusses the major errors in measurement for photographic interpretation. The supplement contains: (a) Effect of errors of altitude and focal length upon measurement of ground object size; (b) Effect of tip on scale in photographs for photo-interpretation.

KATZ, AMROM H. Proper mounting of focal-plane shutter cameras for oblique aerial photography. (Army Air Forces. Engineering Division. ENG-59-680-60-3). Off. Pub. Bd., Report, PB 10048. 1944. 3 p. Price: Microfilm-50¢-Photostat-$1.00
Tests prove that the bad acceleration characteristics of focal plane shutters can be put to good use if the cameras are arranged so that the curtain travels upward. Diagram shows proper mounting of focal plane shutters.

KATZ, AMROM A. Tests at New Orleans Air Base of effect of condensation on camera lens. (Army Air Forces. Engineering Division. ENG-M-59-680-44-1). Off. Pub. Bd., Report, PB 7676. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes a method of drying air before it enters the camera.

KENDALL, C. W. Aerial photography through glass plates with 40" telephoto lenses. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-2). Off. Pub. Bd. Report, PB 10039. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
These tests were in connection with arrangements for heating Type K-15 cameras to keep them in focus. Ordinary plate glass was not of sufficiently good optical quality for use in front of these lenses. An optical flat of the same type as a high grade filter had no deleterious effects upon image quality. Exhibits A, B and C mentioned in report are missing.

KENDALL, CLARENCE W. AGFA panchromatic reversible paper, emulsion no. E-4724. (Army Air Forces. Experimental Engineering Section. EXP-M-59-678-20-1). Off. Pub. Bd., Report, PB 9983. 1940. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
As a result of both air tests and sensitometric tests, it was concluded that, while subject material was fairly fast, it had insufficient contrast for use for the purpose intended.

KENDALL, CLARENCE W. Bausch & Lomb 24 inch f/6 lens. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-12-4). Off. Pub. Bd., Report, PB 7627. 1940. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This new design lens shows considerable improvement. Distortion has been reduced to approximately one half that in the old design and there has been considerable improvement in resolving power. Table in appendix.

KENDALL, CLARENCE W. Bausch & Lomb 40-inch f/8 telephoto lenses. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-20-6). Off. Pub. Bd., Report, PB 7625. 1941. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
This series of tests attempted to discover a constant difference between the infra-red setting and minus blue, or amber, filter settings. A tabulation of data appears in the appendix. It is recommended that all 40-inch telephoto lenses be focussed photographically in the cameras both for infra-red (no. 89a) and for the no. 16 filter because the difference of 2.5 mm. decided upon for these settings is only approximate.

KENDALL, CLARENCE W. C-1 view camera lens- Bausch & Lomb Tessar, 12-inch f/4.5 for 8 x 10-inch negatives. (Army Air Forces. Experimental Engineering Section. EXP-M-59-673-12-1). Off. Pub. Bd., Report, PB 7624. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The lens has a low resolving power zone between 10° and 25° where the resolution drops below 5 lines per mm. Illumination and resolving power data in appendix.

KENDALL, CLARENCE W. Camera focusing methods and shutter speed characteristics. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-20-13). Off. Pub. Bd., Report, PB 7528. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
As a result of a conference with engineering and scientific personnel of the Fairchild organization it was decided that checking of cameras to determine accuracy of focusing can best be accomplished by collimator methods.

KENDALL, CLARENCE W. Contact printing-loss of print detail caused by lack of contact. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-4). Off. Pub. Bd., Report, PB 10020. 1942. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this study was to develop a mathematical expression showing the maximum amount a negative may be out of contact in a contact printer and still reproduce any given resolving power in the print.

KENDALL, CLARENCE W. Defender Varigam filters for use on Varigam paper. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-22-2). Off. Pub. Bd., Report, PB 7579. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report gives the spectral transmission characteristics of Varigam filters.

KENDALL, CLARENCE W. Eastman anastigmat lens, 10-inch f/4.25 for use in type K-21 camera. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-20-1). Off. Pub. Bd., Report, PB 7600. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The lens is approved for use in the K-21. Test data are given in the appendix.

KENDALL, CLARENCE W. Eastman experimental 12-inch f/5.0 lens for 9 x 9 inch negatives, serial no. EX-0000, Test no. 1. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-12-10). Off. Pub. Bd., Report, PB 7597. 1940. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The lens was superior in illumination characteristics but inferior in definition to the other similar lenses tested.

KENDALL, CLARENCE W. Eastman optical filters made with methacrylate cement. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-1). Off. Pub. Bd., Report, PB 7586. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
As a result of this test it is recommended that in all gelatin-between-glass filters procured for photographic use by the Air Corps , the cementing medium be methacrylate instead of Canada balsam.

KENDALL, CLARENCE W. Eastman photographic lens, formula 45-J-30. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-12-21). Off. Pub. Bd., Report, PB 7598. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Test results are given in the appendix. Lens has a low resolving power zone at 15° off the axis and is less suitable for use in K-17 camera than is the lens made on formula 289-K.

KENDALL, CLARENCE W. Eastman 12-inch f/2.5 lens for night photography, formula 224-K-2. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-20-2). Off. Pub. Bd., Report, PB 7599. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This lens has unusually good resolving power and is entirely suitable for use in the K-12 camera to replace the 13½ inch f/3.5 now being used. Data in appendix.

KENDALL, CLARENCE W. Effect of plexiglas blister on definition in aerial photographs. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-12-18). Off. Pub. Bd., Report, PB 10059. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The experiment to discover what happened to photographs taken through the plexiglas "blisters" used on military airplanes showed a tremendous loss in resolving power when the photographs were taken through plexiglas containing striae and other optical defects.

KENDALL, CLARENCE W. Effects of temperature changes on the focus of 40" f/8 telephoto lenses. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-29-1). Off. Pub. Bd., Report, PB 7655. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Since serious changes in the focusing of 40" telephoto lenses occur with temperature changes it is recommended that no further procurement of 40" telephoto lenses for use in K-22 camera should be made pending the outcome of research to determine suitable means of keeping the camera temperature constant.

KENDALL, CLARENCE W. Experimental study and tests of Multazo paper, manufactured by the C.P. Pease Company, Chicago, Ill. (Army Air Forces, Experimental Engineering Division, EXP-M-59-680-26-2). Off. Pub. Bd., Report, PB 9985. 1942. 3 p. Price: Microfilm-50¢ Photostat-$1.00
Describes the sensitometric method devised for testing Multazo and similar materials. The diagrams of the apparatus used for the test is missing from the appendix. Maximum densities and minimum bleaching exposures are given in the appendix.

KENDALL, CLARENCE W. Experimental study and tests of Ozalid paper manufactured by the Ozalid Corporation, Johnson City, New York. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-26-1). Off. Pub. Bd., Report, PB 9984. 1942. 4 p. Price: Microfilm-50¢ Photostat-$1.00
Describes the method of making a sensitometric study of the subject paper. Appendix contains a sketch showing the apparatus used in the test and a tabulation of test data.

KENDALL, CLARENCE W. Lens, Eastman anastigmat, 13½" f/3.5, serial no. EC421, formula 35-J-102, Test no. 37. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-20-9). Off. Pub. Bd., Report, PB 7615. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Results of resolving power test are given in the appendix. As a result of test it was suggested that all lenses produced for aerial night photography be coated with cryolite (sodium aluminum fluoride).

KENDALL, CLARENCE W. Minimizing motion in aerial photographs. (Army Air Forces. Engineering Division. ENG-59-680-44-4). Off. Pub. Bd., Report, PB 10061. 1943. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Purpose of this report is to close out an expenditure order.

KENDALL, C. W. Outdated film received from the Pacific Theatre of operations. (Army Air Forces. Engineering Division. ENG-M-59-680-23-24). Off. Pub. Bd., Report, PB 7388. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Comments on two rolls of unexposed aerial film received from Australia, April 20, 1943. Both rolls were long past the expiration date, which was the Fall of 1941, and had lost considerable speed. Recommendation is made that such film be replaced by air shipment of fresh film.

KENDALL, CLARENCE W. Paper, type I, contrast 2, received for test from Field Service Section, Wright Field. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-22-1). Off. Pub. Bd., Report, PB 9986. 1941. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This paper, which had been submitted by the 118th Observation Squadron as unsatisfactory was tested and found to be satisfactory. Test results are given in the appendix.

KENDALL, CLARENCE W. A rapid autocollimation method of focusing aerial cameras. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-15-3). Off. Pub. Bd., Report, PB 7527. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes a method for rapidly checking and focusing aerial cameras by autocollimation. Diagram included.

KENDALL, CLARENCE W. Resolving power of photographic plates used in lens testing, Report no. R.P. 3. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-23-13). Off. Pub. Bd., Report, PB 10021. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Eastman type V plates, with sensitization, which are panchromatic and sensitized to wavelength 680 millimicrons are recommended for the testing of all lenses, except those to be used in the infra-red. Eastman type V A-N plates, sensitized to cover the infra-red region from 690 to 840 millimicrons are recommended for testing lenses in the infra-red.

KENDALL, CLARENCE W. Test of Eastman super-XX motion picture film (type II, class L). (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-14-1). Off. Pub. Bd., Report, PB 7545. 1940. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Test shows that Eastman Super-XX is not as fast as Agfa Ultra Speed film. The appendix shows sensitometric characteristics for both films.

KENDALL, CLARENCE W. Unsatisfactory report on meter, light exposure (Weston, Model 617). (Army Air Forces. Experimental Engineering Section. U-EXP-M-59-680-11). Off. Pub. Bd., Report, PB 10054. n.d. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Comment on unsatisfactory report, Materiel Division, Serial no. 41-1266 received from Selfridge Field. This meter was examined at the Materiel Division and failed to register correctly, probably on account of wearing of the moving parts of the galvanometer and change in sensitivity of the phototronic cell elements. It was of an obsolete type, and considered beyond economical repair.

KENDALL, CLARENCE W. Visit of Mr. George M. Bryan of the Research Branch, U.S. Forest Service, re Photography by means of natural polarized light. (Army Air Forces. Experimental Enigneering Section. EXP-M-59-680-12-16). Off. Pub. Bd., Report, PB 7585. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
It was decided that the process developed by Mr. Bryan was not satisfactory for use in aerial photography.

KENDALL, CLARENCE W. Waterproof base photographic paper. (Army Air Forces. Experimental Engineering Section. U-EXP-M-59-680-12). Off. Pub. Bd., Report, PB 9982. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
It is recommended that Type XX paper be used to remedy the unsatisfactory condition mentioned in the unsatisfactory report.

KENYON, A. A. High-speed film for use in night photography. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-46-6). Off. Pub. Bd., Report, PB 9932. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Eastman has produced a film with a Weston rating of 200 as compared to Standard N with a Weston rating of 150. Photographs included.

KEVER, O. M. Test of regulator, constant current, with intensity control and runway selection. (Army Air Forces. Experimental Engineering Section ENG-M-54-656-270). Off. Pub. Bd., Report, PB 5650. 1941. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
This memorandum records results of inspection and test of the initial article manufactured at plant of General Electric Company, Lynn, Mass., May 29, 1941. The regulators procured were developed to provide a means of varying the intensity of runway and approach lights and to provide a means of switching the equipment to any one of four runways. Unity power factor test is tabulated in Appendix I, variation of load current with primary voltage is tabulated in Appendix II, and low power factor test and harmonics tests are tabulated in Appendix III. Appendix 4 and 5 show results graphically.

KING, DELBERT H. One cycle per second K-24 camera gear box and shutter assembly. (Army Air Forces. Engineering Division. ENG-59-675-152-1). Off. Pub. Bd., Report, PB 5834. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report gives results of tests on K-24 camera gear box and shutter assembly constructed for one cycle per second operation, and interchangeable with the standard K-24 camera gear box and shutter. The problem was one of mechanical design, involving changes in the gear box. The necessary changes were accomplished by Eastman Kodak Company. A life test was conducted on one of the assemblies by running it continuously on two second intervalometer action, results of this tests are fully described. Conclusions complete the report.

KING, D. H. 7" x 9" roll film magazine with focal plane shutter for K-3B and K-17 aerial camera. (Army Air Forces. Engineering Division. TSEPL-4-675-100-1). Off. Pub. Bd., Report, PB 9926. 1944. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
The 7" x 9" roll film magazine designed and constructed by Fairchild aviation for the K-3B and K-17 aerial cameras proved to be a satisfactory unit. Photographs.

KING, DELBERT H. Study means to minimize the effect of glare, due to polarized reflection of light from water, under varying photographic conditions. (Army Air Forces. Engineering Division. ENG-59-675-155-1). Off. Pub. Bd., Report, PB 9905. 1944. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
This report gives results of the use of a Polaroid filter to reduce reflected glare when taking pictures over water. Photographs of the lens with filter are included.

KOCH, W. R. Refractive index of metrogon filter. (Army Air Forces. Engineering Division. ENG-59-680-20-42). Off. Pub. Bd., Report, PB 7537. 1944. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
The refractive index of this filter was 1.5244.

KOEPFER, A. A. Utilization and distribution of vacuum in standard aerial camera magazines for positioning the film flat in the focal plane during exposure. (Army Air Forces. Engineering Division. TSEPL-4-675-159-1). Off. Pub. Bd., Report, PB 7328. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
An AAF memorandum report of a study of the present vacuum system in standard aerial camera magazines to determine if it is adequate for positioning the film properly in the focal plane during exposure. Design and construction changes which will improve this condition are outlined.

LEVISON, W. J. Resolving power in contact printing. (Army Air Forces. Engineering Division. ENG-59-680-62-8). Off. Pub. Bd., Report, PB 10051. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this test was to compare results obtained with a printer using single light source with an A-14 printer. It was concluded that the printer with a single light source gave much higher resolution.

LEVISON, WALTER J. Resolving power of Army Air Forces chloride papers. (Army Air Forces. Engineering Division. ENG-59-680-62-4). Off. Pub. Bd., Report, PB 10033. 1944. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were conducted to determine the variation of resolving power between the types of Army Air Forces chloride papers and to determine the effect of contrast on the resolving power within the types. Test data is given in the appendix.

LORENZ, GILBERT G. Application of aerial photographs to mapping. (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-17-1). Off. Pub. Bd., Report, PB 10043. 1941. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
A progress report for the preceding year, particularly on wide angle mapping development. Equipment tested included: normal multiplex projectors, relief compensator for stereocomparagraph, polaroid stereoscopic projectors, vectographic kit for producing stereoscopic views from overlapping photographs, Gaertner Comparator for calibrating cameras and measuring distortion in diapositives, etc.

LORENZ, GILBERT G. Application of aerial photographs to mapping. (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-53-1). Off. Pub. Bd., Report, PB 10040. 1942. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a progress report for the preceding year, outlining investigations on mapping cameras, mapping methods, and mapping equipment at Wright Field. Procedures for mapping by means of the wide angle multiplex projectors and for compilation of tri-metrogon photographs were established.

MacCASH, D. Gelatin star-shaped filter. (Army Air Forces. Engineering Division. ENG-M-59-680-52-2). Off. Pub. Bd., Report, PB 7575. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Spectral transmittance of one (1) gelatin star-shaped filter appears in appendix.

MACCASH, D. F. Light filters. (Army Air Forces. Engineering Division. ENG-59-680-52-19). Off. Pub. Bd., Report, PB 7525. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
The spectral transmittance curves for 26 gelatin photographic filters and two metal coating on glass filters appear in the appendix to this report.

MACCASH, D. F. Neutral filter. (Army Air Forces. Engineering Division. ENG-54-656-705). Off. Pub. Bd., Report, PB 9953. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The spectral transmittance curve of the neutral filter is shown in the appendix.

McCOLLISTER, J. W. Kit, data recording of flux-gate compass B-29 aircraft. (Army Air Forces. Engineering Division. TSEPL-4-675-174-1). Off. Pub. Bd., Report, PB 7334. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this memorandum is to report work accomplished toward providing a suitable kit for recording the indicator dial of the flux-gate compass mounted in B-29 aircraft, and to close out the expenditure order. It was found that a kit composed of the following items will satisfactorily record this indicator dial; 1. One type A-4 camera modified per Army Air Forces drawing No. X46A8017; 2. one elbow assembly; 3. one first surface mirror; 4. one camera bracket; 5. one 25 mm. f/2.3 lens for type A-4 camera. The photograph of the complete assembly setup is missing. Appendix I contains instructions for pre-focusing 25 mm. f/2.3 lens for use with kit, data recording for flux-gate compass in B-29 aircraft.

McCOLLISTER, J. W. Lamp lock screw for Bell & Howell 16 mm. motion picture projectors. (Army Air Forces. Engineering Division. TSEPL-4-681-143-1). Off. Pub. Bd., Report, PB 10078. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Summarizes work done on a lamp lock screw for use on standard Army Air Forces 16 mm. motion picture projectors.

McGLADREY, L. L. Service test of A-10 film dryers. (Army Air Forces. Engineering Division. ENG-59-681-97-3). Off. Pub. Bd., Report, PB 7614. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The test on one experimental dryer was reported in Memorandum Report EXP-59-681-97-3. Twelve dryers were tested for this report and found satisfactory.

McGLADREY, L. L. Summary of airborne photographic laboratory kits. (Army Air Forces. Engineering Division. TSELA-4D-681-134-2). Off. Pub. Bd., Report, PB 7594. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Data on the above subject were included in a booklet which was attached to the original report but is missing from this copy of the report.

MAGNUS, GEORGE A. Processing equipment for motion picture film. (Army Air Forces. Engineering Division. TSEPL-4-681-120-2). Off. Pub. Bd., Report, PB 7544. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Various motion picture processing units were secured and tested in preparation for designing motion picture processing equipment for first, second, third and fourth echelons' use in the field.

MAGNUS, GEORGE A. Remote controls for combat motion picture cameras. (Army Air Forces. Engineering Division. ENG-59-675-147-1). Off. Pub. Bd., Report, PB 11638. 1944. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Closes out Expenditure Order under which preliminary work was done as work is now being accomplished on E.O. No. 681-135. Control as designed proved impractical on preliminary tests with two Type K4.G.S.A.F. cameras to be installed in the asrodome of a B-17E airplane and operated by remote control.

MAY, T. J. and OLSON, A. C. P-39 airplane photographic installation. (Army Air Forces. Engineering Division. ENG-59-675-125-21). Off. Pub. Bd., Report, PB 9906. 1943. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
This report records details of the installation of cameras in the P-39 airplane. Satisfactory rear oblique and vertical photographs can be taken with the camera installation in the P-39. Appendix I gives instructions regarding: Removal of cameras, installation of cameras, and operation of cameras. The appendix also contains a discussion of the modifications of the camera installation. Vertical and rear oblique views taken from the airplane are included as are photographs of the camera installation.

MAY, T. J. Rotating mount for K-25 camera with mirror attachment. (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-112-1). Off. Pub. Bd., Report, PB 9934. 1942. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes experimental model rotating mount which was developed for taking photographs with the K-25 camera with right angle mirror attachment. Photographs of equipment and photographs taken with the mount installed are included in the appendix.

MERRILL, B. D. Aerial photography in Mediterranean theater of operations. (Army Air Forces. Engineering Division. TSEPL-4-677-28-3). Off. Pub. Bd., Report, PB 10023. 1945. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this report is to summarize the work being done in the Mediterranean Theater of Operations in aerial photography. Appendix I lists the organizations visited by the technical representative. Appendix II describes the organization of photographic units in M.T.O. Appendix III is concerned with listing the aerial photographic equipment available to British and American groups.

MERRILL, B. D. Annular haze filter. (Army Air Forces. Engineering Division. ENG-59-677-22-6). Off. Pub. Bd., Report, PB 7526. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
A test designed to decide the suitability of an annular flashing filter as a substitute for the three haze-correcting filters used with present color film resulted in the recommendation that the annular flashing filter be considered only where there are very special requirements for such a device.

MERRILL, B. D. Duplication of aerial haze. (Army Air Forces. Engineering Division. ENG-59-677-22-5). Off. Pub. Bd., Report, PB 7519. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
As a result of this test it was concluded that aerial haze conditions can be approximately reproduced in the laboratory.

MERRILL, B. D. Haze flashing filter. (Army Air Forces. Engineering Division. ENG-59-677-22-3). Off. Pub. Bd., Report, PB 7539. 1944. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
This report is concerned with a haze flashing filter for reducing the resultant contrast of pictures taken on U.S. Army Air Forces, standard, high-altitude, high-contrast, color-reversal film, when exposures are made at low altitude. The test pictures are missing from this copy but the appendix does contain a discussion of the theory on which the filter works.

MERRILL, B. D. Measurement of aerial haze. (Army Air Forces. Engineering Division. ENG-59-677-22-4). Off. Pub. Bd., Report, PB 7518. 1944. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
To measure haze an automatic recorder was constructed and flown on ten high altitude missions. Consolidated data curves for these are given in the index. Specular transmission of aerial haze and overall reflectivity of an average city are given in the appendix. The variations in strength of the haze filter necessary to give good aerial color transparencies under different conditions were checked against the ratio of the total blue light to the total red light reflected upward under the same conditions.

MERRILL, B. D. Study of aerial haze. (Army Air Forces. Experimental Engineering Section. EXP-M-59-677-22-2). Off. Pub. Bd., Report, PB 7900. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report summarizes tests conducted to study haze and its application to color photography.

MOHR, HUGH W. Installation of air conditioning unit in Type A-2 portable photographic laboratory. (Army Air Forces. Engineering Division. ENG-59-679-32-5). Off. Pub. Bd., Report, PB 7589. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Enumerates the units tested. The appendix containing test data is missing.

MOTTER, LEONCE N. Resolving power of photographic paper. (Army Air Forces. Engineering Division. TSEPL-4-680-62-16). Off. Pub. Bd., Report, PB 10014. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes tests made on four contrasts of Types I and IX paper using the A-14 contact printer and enumerates various conclusions reached in regard to resolving power. Appendix gives resolving power of both chloride and bromide papers under various conditions.

MUNGALL, WILLIAM. Modification of type A-7 magazine for increased film capacity. (Army Air Forces. Engineering Division. TSEPL-4-675-20). Off. Pub. Bd., Report, PB 7681. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The modification of the A-7 magazine to increase film capacity from 75 feet to 200 feet is considered practical and can be accomplished at depots. Photographs showing various views of completed modification are missing from this copy.

MUNGALL, WILLIAM. Shutter failure indicating device. (Army Air Forces. Engineering Division. TSEPL-4-675-158-2). Off. Pub. Bd., Report, PB 9907. 1944. 18 p. Price: Microfilm-50¢ - Photostat-$2.00
This report describes a device which indicates shutter failure. Since the number of shutter failures experienced by groups using the 6-inch K-17 camera is small, such a device is not considered essential. A diagram and photographs are included with the report.

MUNGALL, WILLIAM. Standardization of aerial film. (Army Air Forces. Engineering Division. TSELA-40-675-16). Off. Pub. Bd., Report, PB 9904. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes a new type 5½ inch film spool, designed by Eastman for K-20, K-24 and K-25 camera. A record and routing slip from Assistant Chief, Air Staff, Maintenance and Supply to Assistant Chief, Air Staff, Office Commitments and Requirements relative to use of 5½" film is appended. There are also three photographs of the interchangeable spool.

NARDELI, C. A. Installation of ten cameras and necessary film in the B-24D airplane. (Army Air Forces. Engineering Division. ENG-M-51-4263-13). Off. Pub. Bd., Report, PB 9638. 1943. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
This report provides sufficient data for installing ten cameras and necessary film and equipment in a B-24D airplane for long-range photographic missions. Appendix 1 contains a table of weight data and performance and fuel versus range, endurance, and film weight curves. Appendix 2 contains a discussion of the study. Appendix 3 contains a drawing of the installation.

NIERENBERG, RICHARD N. Bausch and Lomb Optical Company 12" f/4.0 lens. (Army Air Forces. Engineering Division. TSEPL-4-680-71-8). Off. Pub. Bd., Report, PB 9909. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
This lens was tested in May 1944 as described in Memorandum Report No. ENG-59-341-413-16. The resolving power data and the distortion data indicate that the subject lens is satisfactory. It is recommended that the lens be considered for standard, to replace the standard 12" lens in the K-22 camera. Description of the lens, distortion data, resolving power data, and photographs are in the appendix.

NIERENBERG, RICHARD N. Bausch and Lomb 20-inch f/5.6 telephoto lens. (Army Air Forces. Engineering Division. ENG-59-341-413-5). Off. Pub. Bd., Report, PB 7591. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Resolving power data are given in appendix. Satisfactory definition is not obtained with subject lens beyond 7½° half angle.

NIERENBERG, RICHARD N. Bausch and Lomb's 20" f/5.6 telephoto lens, new design. (Army Air Forces. Engineering Division. ENG-59-341-413-8 and ENG-59-341-413-8 (1)). Off. Pub. Bd., Report, PB 9910. 1943. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Subject lens is superior to standard lens now in use. Resolving power and illumination data are given in appendix. Aerial photographs are attached.

NIERENBERG, RICHARD N. Eastman kodak 7" f/2.5. (Army Air Forces. Engineering Division. ENG-M-59-680-20-18 (2)). Off. Pub. Bd., Report, PB 7346. 1943. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
This addendum no. 2 to memorandum report no. EXP-M-59-680-20-18 contains a table showing resolving power and illumination data of subject lens with lens aperture stopped down to f/4.5.

NIERENBERG, RICHARD N. Eastman Kodak 35 mm. f/3.5 lens. (Army Air Forces. Engineering Division. ENG-M-59-289). Off. Pub. Bd., Report, PB 7350. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
It was determined by testing that the Eastman Kodak 35 mm. f/3.5 lens was a suitable supplementary source of supply for use in the Gun Sight Aiming Point Camera. Resolving power data are given in appendix.

NIERENBERG, RICHARD N. Eastman 24" f/6 Aero Ektar lens. (Army Air Forces. Engineering Division. ENG-59-341-413-19). Off. Pub. Bd., Report, PB 7644. 1944. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this test was to determine the amount of shift in back focus of subject lens caused by yellow, red and infrared radiation and to determine the resolving powers of aperture settings of f/6, f/8 and f/11. Test data are in the appendix.

NIERENBERG, RICHARD N. "Focalscope" an instrument for focusing aerial cameras. (Autocollimator). (Army Air Forces. Engineering Division. TSEPL-4-680-71-5, TSEPL-4-680-71-5, Add. 1). Off. Pub. Bd., Report, PB 7529. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes the design and fabrication of an instrument to facilitate focusing of aerial cameras which use the A-5, A-5A and A-9 film magazine.

NIERENBERG, RICHARD N. C. P. Goerz American Optical Company. (Army Air Forces. Engineering Division. ENG-59-680-20-35). Off. Pub. Bd., Report, PB 7671. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Three lenses (3 inch f/2.3, 150 mm f/4.5, and 2 inch f/2) submitted by the above company were tested and found suitable for Air Forces use. Test data are given in appendix.

NIERENBERG, RICHARD N. and WOODFORD, E. B. Plastic diafon filters - Thomas S. Curtis laboratories. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-41-7). Off. Pub. Bd., Report, PB 7583. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The above named filters are cellulose acetate films, 0.001" thick, tightly stretched between two fibre wings cemented together. The filters were satisfactory as to resolving power and color. They were not affected by heat, cold or humidity. They were very fragile.

NIERENBERG, RICHARD N. Telechad 20" f/5.6 telephoto lens. (Army Air Forces. Photographic laboratory. ENG-M-59-680-20-20). Off. Pub. Bd., Report, PB 7620. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Resolving power and illumination characteristics are given in appendix. Performance of subject lens is inferior to 20" f/5.6, 5" x 7" but it is considered satisfactory for a 5" x 5" negative size.

NIERENBERG, RICHARD N. Test of the Bell and Howell Company 24-inch f/6 photographic lens. (Army Air Forces. Engineering Division. ENG-59-341-413-14). Off. Pub. Bd., Report, PB 7641. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This lens is not satisfactory for use by the Air Corps. Test data are included in the appendix.

NIERENBERG, RICHARD N. Test of Curtis 7" f/2.8 lens. (Army Air Forces. ENG-M-59-680-51-1). Off. Pub. Bd., Report, PB 7618. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
It was concluded as a result of this test that the sample plastic lenses were not satisfactory as a substiute for the standard glass lenses now in use in the K-24 camera but it was recommended to Dr. Curtis that he accelerate his study of polystyrene so that a color corrected plastic lens can be produced with less field curvature. Tests results are given in the appendix.

NIERENBERG, RICHARD N. Test of Eastman 15" f/5.6 telephoto lens. (Army Air Forces. Engineering Division. ENG-59-341-413-12). Off. Pub. Bd., Report, PB 9914. 1944. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes the tests conducted to determine the resolving power and illumination characteristics of the Eastman 15"f/5.6 telephoto lens. The description of the lens and test results appear in appendix photographs.

NIERENBERG, RICHARD N. Tests of Bausch & Lomb Optical Company 40-inch f/8 lens. (Army Air Forces. Engineering Division. ENG-59-341-413-2). Off. Pub. Bd., Report, PB 7590. 1943. 3 p. Prices: Microfilm-50¢ - Photostat-$1.00
This test was to determine the performance of a newly designed telephoto lens. Illumination and resolving power data, and back focus data are given in the appendix, but the panchromatic and infra-red photographs are missing. A letter from Bausch & Lomb relative to using a 38½ inch focal length is also missing.

NIERENBERG, RICHARD N. Tests on Howard College observatory 5.6", F/2.5 lens. (Army Air Forces. Engineering Division. ENG-M-59-680-20-21). Off. Pub. Bd., Report, PB 7619. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This lens is satisfactory over a half angle of 28° 30'. It is to be pointed out that 31° 34' half angle is required in a 7" lens covering a 5"X7" negative. Definition in center is exceptionally fine. Lens is comparatively easy to manufacture because of shallow lens curves and need for only two kinds of glass.

OFFENHAUSER, WILLIAM H., JR. and others. Summary report - subcommittee on photographic equipment and supplies. (OSRD Report 6218). Off. Pub Bd., Report PB 11968. 1945. 35 p. Price: Microfilm - 50¢ - Photostat - $3.00
This report deals with the problem of the deterioration of photographic equipment and supplies in tropical war areas. Much of the materiel sent to those areas has been subject to destruction by attack from fungi and to corrosion by high moisture content of the warm air. Investigations have shown that the best solutions for these problems rests in the following measures: Improved and tropic-proofed packaging; preventive and preserving treatments applied to the materiel in manufacture or after overseas wrappings are removed. The greatest degree of deterioration in cameras, projectors, etc. occurred in the leather and fabricoid coverings of this equipment and in the optical systems. Study was directed to the best means of applying preventive treatments to such items as gaskets, bellows, camera coverings, etc. using coating materials like lacquer with and without the inclusion of fungicides. Special attention was given to protection of optical systems by use of "doped" paints and improved maintenance procedures.

OLSON, A. C. Overcoated chloride emulsions contact printing paper. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-22-7). Off. Pub. Bd., Report, PB 9971. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes an Aero Contact Paper No. 2 emulsion, coated on a waterproof base stock which was provided by Eastman. Data given in appendix.

OLSON, A. C. Overcoated emulsion paper for wet printing. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-22-5). Off. Pub. Bd., Report, PB 9980. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Prints made with subject papers are generally satisfactory. Quick printing methods are feasible with the subject paper.

OLSON, A. C. Overcoated emulsion printing paper. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-22-6). Off. Pub. Bd., Report, PB 9970. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
A conference was held with Eastman concerning a chloride printing paper on waterproof base to be used for quick-work process, for making contact prints from a wet or hypo-soaked negative.

OLSON, A. C. Tests of Illingworth's commercial bromide paper. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-43-1). Off. Pub. Bd., Report, PB 9969. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The subject paper, manufactured in England and distributed by Medo meets the requirements of Type IV, contrast 1, photographic paper. Appendix compares this paper with the specification.

OLSON, A. C. Tests of vapo paper. (Army Air Forces. Engineering Section. EXP-M-59-680-42-1). Off. Pub. Bd., Report, PB 9979. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The Frederick Post Company, Chicago, is recommended as a source of supply of Type 1, classes A and B of Direct Positive Sensitized paper.

OLSON, A. C. Tests of vapo paper. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-42-2). Off. Pub. Bd., Report, PB 10024. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The material tested, regular and fast red line printing paper manufactured by Frederick Post, Chicago, met neither visual density nor speed specifications.

OLSON, A. C. Water-resistant base photographic paper. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-22-8). Off. Pub. Bd., Report, PB 9972. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Samples of chloride and bromide paper submitted by the Defender Photo Supply Company meet Air Forces requirements.

OWEN, CALVIN P. Jamesway Shelter. (Army Air Forces. Engineering Division. ENG-M-59-441-31-5). Off. Pub. Bd., Report, PB 11938. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
This report gives the results of the tests which were conducted at Blythe, California to discover the adaptability of the Jamesway Shelter to desert conditions.

PEARSALL, J. S. Duplication of aerial negatives. (Army Air Forces. Engineering Division. ENG-59-681-70-1). Off. Pub. Bd., Report, PB 10025. 1943. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were conducted to determine the most suitable method available for duplicating aerial roll film. Points receiving special consideration are discussed in the appendix. The prints which illustrate these points are not included in this copy.

MARSALL, J. S. Portable aerial film splicers. (Army Air Forces. Engineering Division. ENG-M-59-681-86-1). Off. Pub. Bd., Report, PB 11896. 1943. 3 p. Price: Microfilm - 50¢ - Photostat - $1.00
The Eastman model S-2 aerial film splicer was tested and found entirely satisfactory for Air Forces use. Certain changes were recommended.

PETERSON, L. M. Waterproof paper. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-33- (1)). Off. Pub. Bd., Report, PB 9989. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Two samples of waterproof paper were submitted for moisture permeability tests.

PHILLIPS, C. H. Pease continuous paper processing machine and printer. (Army Air Forces. Engineering Division. ENG-59-681-89-2). Off. Pub. Bd., Report, PB 9967. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests indicated that satisfactory prints could be made with this equipment at a high rate of production but a complete redesign of the machine would be necessary to make it suitable for use as a portable machine.

PHILLIPS, C. H. Study of variable contrast papers. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-25-2). Off. Pub. Bd., Report, PB 7884. 1942. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Eastman multi-contrast and Varigam (Defender products) paper were tested. Satisfactory variation in print contrast may be obtained with either paper when used with proper filters. Sample prints made on both types of paper are missing from this copy. Exposure times and data concerning filters are given in appendix.

PRYOR, PAUL L. Cold weather tests, photographic processing, Alaska, Winter 1942-1943. (Army Air Forces. Engineering Division. ENG-M-59-681-94-1). Off. Pub. Bd., Report, PB 11899. 1943. 11 p. Price: Microfilm - 50¢ - Photostat - $1.00
This report discusses the work accomplished in Alaska in the field of arctic processing. Attached to the report is a letter addressed to the Commanding Officer of Ladd Field which gives further details of the photographic processing which was done in Alaska. Some pages will not reproduce well. Photograph of a snow melter is included. Appendix 2 contains data secured from a sensitometric study of six exposures made with a ground camera.

PRYOR, PAUL L. Dodging masks for printing 6" metrogon lens negatives on the A-6A contact printer. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-79-1). Off. Pub. Bd., Report, PB 7679. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
It was found that the dodging masks did not provide a very practical method of compensating for the uneven density.

PRYOR, PAUL L. Dodging masks for type A-1A contact printer. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-32-2). Off. Pub. Bd., Report, PB 7680. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Representatives of Eastman, Defender, Agfa Ansco and the First Photographic Squadron met to discuss dodging masks for use with the A-1A contact printer.

PRYOR, PAUL L. Lens, 5-½" f/4.5 Ilex Paragon Anastigmat. (Army Air Forces. Engineering Division. TSAPL-4-680-80-2). Off. Pub. Bd., Report, PB 7325. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
A report on the optical characteristics of a 5-½" f/4.5 Ilex Paragon Anastigmat Lens for the 4" x 5" C-3 ground camera. Tests were made to obtain procurement data on a lens of shorter focal length than the 6-3/8" lens now being issued with C-3 cameras. This lens is satisfactory from an engineering point of view for this use. Tables and photographs.

PRYOR, PAUL L. Photographic fixing agents. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-34-3). Off. Pub. Bd., Report, PB 7534. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This report discusses the advantages and disadvantages of supplying other forms of sodium thiosulfate (hypo) or ammonium thiosulfate to replace or supplement the present method of supplying sodium thiosulfate. Comparative shipping weights and costs appear in appendix.

PRYOR, PAUL L. Resolving power of Eastman Kodak 18.5" f/10 anastigmat lens serial number HEA 187, at 1:1 magnification. (Army Air Forces. Engineering Division. ENG-59-341-413-10). Off. Pub. Bd., Report, PB 7343. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes the test to determine resolving power of subject lens at 1:1 magnification.

RICHARDS, WILLIAM H. Continuous wet printer, Morse model WP-1, contract no. 43-23882-E. (Army Air Forces. Photographic Laboratory. ENG-59-681-107-2). Off. Pub. Bd., Report, PB 9944. 1944. 13 p. Price: Microfilm-50¢ Photostat-$1.00
This report describes the printer and tests that were made. Suggested changes to improve the model were given. Photographs.

RICHARDS, W. H. Enlarging printer, 9x10. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-12-1). Off. Pub. Bd., Report, PB 10091. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A printer had been designed, built and standardized for portable laboratory and base laboratory use. The printer is similar to the A-6 which it replaces but it will accomodate larger negatives.

RICHARDS, W. H. Sub zero operations with type A-2 portable photographic laboratory. (Army Air Forces. Engineering Division. ENG-M-59-679-23-1). Off. Pub. Bd., Report, PB 7587. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The subject laboratory will not operate satisfactorily below +20°F. It is recommended that mobile laboratory operations be divided into four types, temperate, tropic, desert, and artic, and that suitable accessory equipment be made available at depots in these areas.

SALOMY, RICHARD A. B-2 shelters as photo laboratories. (Army Air Forces. Engineering Division. TSEPL-4-679-50-1). Off. Pub. Bd., Report, PB 11606. 1945. 19 p. Price: Microfilm - 50¢ - Photostat - $2.00
This report describes a photographic laboratory which was installed in three B-2 shelters, and gives results of tests on such an arrangement as a cold weather laboratory. Photographs showing exterior and interior views of the completed laboratory are included. The sketch showing the proposed arrangement of these B-2 shelters for tropical operation is missing from this copy.

SANDERSON, W. R. Printer, photographic, Hunter & Company, type AF, model P-1. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-30-2). Off. Pub. Bd., Report, PB 10092. 1941. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
The above printer was tested to discover its suitability for Air Forces use. The printer is described in detail. Since the workmanship and detail design of this printer are, in general, of inferior quality the printer is not considered satisfactory for Air Forces use. If a definite and justifiable requirement should appear for a two-time enlargement of 4 x 5 negatives the Hunter printer should be redesigned.

SCHECHTER, HARRY. Neutral photographic filters. (Army Air Forces. Engineering Division. ENG-M-59-680-23-15). Off. Pub. Bd., Report, PB 7531. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
It was found that neutral Wratten filters of similar visual transmittance vary over a considerable range in infra-red transmittance. The appendix contains transmittance curves on neutral filters.

SCHECHTER, HARRY. Photographic filters. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-41 (2)). Off. Pub. Bd., Report, PB 7573. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Transmittance curves of eight filters appear in the appendix.

SCHECHTER, HARRY. Photographic filters. (Army Air Forces. Engineering Division. ENG-M-59-680-41- (4)). Off. Pub. Bd., Report, PB 7576. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Curves are given for the spectral transmittance of four photographic filters.

SCHECTER, HARRY. Photographic filters. (Army Air Forces. Engineering Division. ENG-M-59-680-41 (3)). Off. Pub. Bd., Report, PB 10068. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The spectral transmittance of three photographic filters was measured and plotted on curves. Will not reproduce well.

SCHECTER, HARRY. Photometric standards. (Army Air Forces. Engineering Division. ENG-M-56-4031). Off. Pub. Bd., Report, PB 9795. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Includes 4 tables giving calibration data on the reference standards and filters, used with the Macbeth Illuminometer (Leeds & Northrup type 6800) for measuring brightness of luminescent materials.

SCHNEIDERMAN, H. A-11 contact printer. (Army Air Forces. Photographic Laboratory. ENG-M-59-681-80-3). Off. Pub. Bd., Report, PB 9939. 1942. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
As a result of tests it was concluded that the A-11 printer as submitted by the Donaldson Art Sign Company, Covington, Kentucky, would be satisfactory if changes were made according to the long list of recommendations included in the report. Photographs. Poor copy, will not reproduce well.

SCHNEIDERMAN, HERMAN. Processing of prehardened film. (Army Air Forces. Engineering Division. ENG-59-680-56-5). Off. Pub. Bd., Report, PB 7514. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The test indicates that Kodak pre-hardened film may be processed satisfactorily at 95°F without additional chemical hardening or anti-fogging agents and that Agfa Ansco pre-hardened film may be processed at 120°F but requires the addition of an anti-foggant.

SCHNEIDERMAN, HERMAN. Tests of D-2 electric flash unit for night photography in New Guinea. (Army Air Forces. Engineering Division. ENG-59-676-40-5). Off. Pub. Bd., Report, PB 11892. 1944. 7 p. Price: Microfilm - 50¢ - Photostat - $1.00
As a result of the tests of the D-2 aerial flash unit it was decided that modified form of the unit should be made a part of the standard installation in radar sea search B-24's. Certain changes in design were recommended. The appendix contains a description of the flash unit and the camera. There are three photographs of the unit.

SCHNEIDERMAN, HERMAN. Type B-11 projection printer. (Army Air Forces. Experimental Engineering. EXP-M-59-681-63-2). Off. Pub. Bd., Report, PB 10087. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes the Elwood Pattern Works Projection Printer which is being considered for acceptance by the Army Air Forces. The appendix contains a list of improvements that would be needed to make the printer suitable for use in the Army Air Forces base laboratories.

SCHOLZ, LOUIS A. Cameras for use with the electric flash lamp assemblies. (Army Air Forces. Engineering Division. TSEPL-4-675-150-3). Off. Pub. Bd. Report, PB 11891. 1945. 6 p. Price: Microfilm - 50¢ - Photostat - $1.00
Describes the K-29 camera which was designed to use with electric flash lamp assemblies.

SCHOLZ, LOUIS A. K-24 fixed mirror attachment. (Army Air Forces. Engineering Division. ENG-59-675-148-1). Off. Pub. Bd., Report, PB 9931. 1944. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
The device, as finally developed, provides means for taking pictures fore and aft, left and right, as fixed before take-off. Photographs included.

SCHOLZ, LOUIS A. Program on automatic leveling and level indication in aerial photography. (Army Air Forces. Engineering Division. ENG-59-675-135-1). Off. Pub. Bd., Report, PB 9976. 1944. 9 p. Price: Microfilm-50¢ - Photostat - $1.00
As a result of this study it is recommended that the National Defense Research Committee be requested to coordinate and supervise the program of stabilization and lens indication, investigating the various suggestions brought up in the meeting with the appropriate agencies, and submitting as soon as possible recommendations as to methods of attack which should be tried.

SCHOLZ, LOUIS A. Revolving mirror attachment. (Army Air Forces. Engineering Division. ENG-59-675-144-2). Off. Pub. Bd., Report, PB 9925. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes an attachment which allows cameras to be remotely controlled for taking of fore and aft, left and right oblique pictures. Photograph.

SCHUMACHER, BRICE A. Conferences regarding lens cementing problems at Eastman Kodak Co. and Bausch and Lomb Optical Company. (Army Air Forces. Engineering Division. ENG-59-680-20-38). Off. Pub. Bd., Report, PB 7673. 1943. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Eastman Kodak Company has a lens cement that will meet requirements. The lenses submitted by Bausch & Lomb were of a different size from lenses used in aerial camera. These lenses passed the tests given them. The Bausch and Lomb conference agreement appears in the appendix. The appendix also contains a discussion of HE 225 Methacrylate-type synthetic lens cement. This particular cement is not referred to in the report.

SCHUMACHER, BRICE A. Development of a knock-down resolving power target. (Army Air Forces. Engineering Division. ENG-59-680-37-1). Off. Pub. Bd., Report, PB 11893. 1943. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
This report describes the outdoor target used for measuring the resolving powers attained in aerial photography.

SCHUMACHER, BRICE A. Eastman aerostigmat 7-inch, F/2.5 lens, serial no. EA502. (Army Air Forces. Experimental engineering Section. EXP-M-59-680-20-12). Off. Pub. Bd., Report, PB 7612. 1942. 8 p. Price: Microfilm-50¢ Photostat-$1.00
Describes tests on the subject lens. On the whole the lens gives good resolution although there is a critical region around 17.5° where the image quality deteriorates due to a curvature of field of the lens at this zone. Four appendices give record on resolving power under various conditions.

SCHUMACHER, BRICE A. Harvard 40" f/5 telephoto lens. (Army Air Forces. Engineering Division. ENG-59-680-20-40). Off. Pub. Bd., Report, PB 9915. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
This report is concerned with the long focus lens with high relative aperture which was designed and constructed by Harvard College Observatory for use by the Air Forces. Laboratory tests of the 40 inch f/5 lens indicate that this lens is satisfactory. The Appendix A referred to in the report is missing. Description of the lens and photographs are given.

SCHUMACHER, BRICE A. Reflex viewfinder in K-15 cameras. (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-35-2). Off. Pub. Bd., Report, PB 11907. 1942. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
This report discusses theFairchild reflex viewfinder. The illustration of the telephoto camera showing built-in reflex viewfinder is missing from this copy of the report.

SCHUMACHER, BRICE A. Status of progress to date on contracts with Lorenzo del Riccio for manufacture of plastic photographic lenses. (Army Air Forces. Engineering Division. ENG-59-680-48-2). Off. Pub. Bd., Report, PB 7668. 2 p. Price: Microfilm-50¢- Photostat-$1.00
Since the initiation of the contracts the contractor has given no indication that he has made any progress in the development of the lenses but it has been demonstrated through contracts with other manufacturers that plastic lenses in their present stage of development are not suitable for aerial photography.

SCHUMACHER, BRICE A. Temperature test of Turner-Reich convertible lenses made by Gundlach Manufacturing Corporation. (Army Air Forces. Engineering Division. TSEPL-4-680-59-7). Off. Pub. Bd., Report, PB 7677. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
The Gundlach Manufacturing Corporation, one of the two known sources of supply in this country for convertible lenses for 283 Type C-1 ground cameras, uses Canada balsam for cement. Lenses procured from this company are to be marked: "Use only between -10°F and +110°F." Test procedure and temperature curves are given in the appendix.

SCHUMACHER, BRICE A. Temperature tests of Bausch & Lomb lenses, 6" f/6.3 metrogons numbers VP9004 and 056069 and 40" f/5.6 VS 3620. (Army Air Forces. Engineering Division. TSELA-4D-680-59-8). Off. Pub. Bd., Report, PB 7592. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests determined that method heretofore used for mounting the standard Bausch & Lomb Metrogon 6" f/6.3 lens is unsatisfactory.

SCHUMACHER, BRICE A. Temperature tests of Wollensak Lenses. (Army Air Forces. Engineering Division. ENG-59-680-59-3). Off. Pub. Bd., Report, PB 7617. 1944. 3 p Price: Microfilm-50¢ - Photostat-$1.00
Four of the six lenses (the 1" f/4.5, 101 mm f/4.5, 6" f/4.5 and 6 3/8" f/4.5) were found satisfactory for use by the Air Forces.

SCHUMACHER, BRICE A. Temperature tests on the cement in Bausch & Lomb lenses. (Army Air Forces. Engineering Division. ENG-59-680-59-2). Off. Pub. Bd., Report, PB 7616. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The test showed that lenses cemented with Bausch & Lomb low temperature cement were satisfactory but those cemented with plasticized balsam do not satisfactorily pass the temperature requirements.

SCHUMACHER, BRICE A. Visits to the Fairchild Aviation Corporation, New York, New York, and to Eastman Kodak Company, Rochester, New York. (Army Air Forces. Engineering Division. ENG-59-680-59-1). Off. Pub. Bd., Report, PB 11923. 1944. 7 p. Price: Microfilm - 50¢ - Photostat - $1.00
Visits were made to the two plants as a result of complaints from the Fairchild Aviation Corporation that certain Eastman lenses contained small blisters. There is no evidence to date indicating that blisters on the cemented surfaces of the lenses in question have a serious optical effect. It is recommended that the Inspection Division take necessary action to modify the method of inspection of lenses so that all lenses with blisters are not arbitrarily rejected. A summary of the conversation at the Fairchild Aviation Corporation relative to storage conditions, inspection methods, temperature tests, photographic tests, and strain tests appears in the appendix. Will not reproduce well.

SEILER, W. A. Storage spools for processed roll aerial film. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-53-1). Off. Pub. Bd., Report. PB 11895. 1942. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00
After studying four types of spools it was decided that the spool consisting of a paper core with molded plastic flanges would be most satisfactory. The appendix gives costs of various types of spools.

SNYDER, H. H. Export packaging for photographic plates. (Army Air Forces. Engineering Division. ESE 4-101). Off. Pub. Bd., Report, PB 11863. 1945. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
The corrugated package which was developed for packing a single photo plate, size 20 x 33 inches should prove satisfactory as a domestic container. Illustrative photographs are missing from this copy.

STETSON, H. E. Type A-11 aerial camera magazine. (Army Air Forces. Engineering Division. TSEPL-4-675-92-1). Off. Pub. Bd., Report, PB 9916. 1945. 24 p. Price: Microfilm-50¢ - Photostat-$1.00
This report summarizes the development of a roll film magazine for use on K-17, K-19, K-22 and K-23 aerial cameras. The A-11 has a film capacity of 205 feet of 9½ inch film and is interchangeable with the A-5 magazine.

STIFFLER, H. F. Data recording unit for aerial cameras. (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-33-2). Off. Pub. Bd., Report, PB 11929. 1942. 1 p. Price: Microfilm - 50¢ - Photostat - $1.00
States that no models were fabricated of data recording units..

STIFFLER, H. F. Type A-10, 3-camera magazine. (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-71-2). Off. Pub. Bd., Report, PB 9917. 1942. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
This magazine for use with 3 standard K-3B or K-17 camera bodies for airways charting photography was procured from the Fairchild Aviation Corporation at the request of the First Mapping Group, Bolling Field. Bench testing indicated that the magazine was satisfactory. It was shipped to the First Mapping Group for final inspection and flight testing. Photographs included.

TARKINGTON, R. G. Night aerial photography. (Army Air Forces. Engineering Division. ENG-59-676-15-29). Off. Pub. Bd., Report, PB 9942. 1942. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes methods used in night photography. Photographs included.

TARKINGTON, R. G. Night photography. (Army Air Forces. Engineering Division. ENG-M-59-676-15-27). Off. Pub. Bd., Report, PB 9938. 1943. 6 p. Price: Microfilm -50¢ - Photostat-$1.00
Reports results obtained in night photography on maneuvers at Ester Field, Louisiana.

TARKINGTON, R. G. Photoflash bombs and films used in night photography. (Army Air Forces. Experimental Engineering Section. EXP-M-59-676-31-1). Off. Pub. Bd., Report, PB 9936. 1942. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes tests conducted with the M-46 photoflash bomb and a new Eastman film. Photographs included. Page 2 will not reproduce well.

TARKINGTON, R. G. Photoflash powders and methods of ignition. (Army Air Forces. Engineering Division. ENG-M-59-676-31-2). Off. Pub. Bd., Report, PB 9933. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
The photographs show a bomb designed primarily to place the bulk of the photoflash powder near the fuse.

TAYLOR, ESTON L. Automatic photocell diaphragm control switch. (Army Air Forces. Engineering Division. ENG-59-675-101-2). Off. Pub. Bd., Report, PB 11894. 1943. 5 p. Price: Microfilm - 50¢ - Photostat - $1.00
A report on tests of a photocell actuated diaphragm control switch.

TAYLOR, ESTON L. Type A-4 view finder for fighter type photo aircraft. (Army Air Forces. Engineering Division. ENG-59-675-131-1). Off. Pub. Bd., Report, PB 11914, 1943. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00
The view finder for use of F-5 pilots on mapping and reconnaissance missions was submitted by the Curtis Laboratories.

U. S. ARMY. ENGINEER CORPS. ENGINEER BOARD. Final report on trailer-sled mounted odograph. (Report 786). Off. Pub. Bd., Report, PB 9880. 1944. 18 p. Price: Microfilm-50¢ - Photostat-$2.00
This report covers the final tests and development work on the installation of the odograph, land, M-1, in the M-29 cargo carrier and the M-29 tow sled for use in snow-covered and arctic terrain for aircraft rescue and search missions. Tests were conducted at Camp Echo Lake Colorado and in the Engineer Board Temperature Tests Laboratory. From these tests it is concluded that the odograph installations are satisfactory from a technical standpoint. The land odograph M-1 is an instrument for automatically plotting the course taken by a moving vehicle. It consists of three principal units - compass, plotting unit, and power pack - interconnected by means of electrical cables and flexible shafts. Photographs, diagram and performance chart are included.

U. S. ARMY ENGINEER CORPS. ENGINEER BOARD. Recording odograph. (Report 786). Off. Pub. Bd., Report, PB 9881. n.d. 97 p. Price: Microfilm-$1.00 - Photostat-$7.00
Report covers the basic research and development of a recording odograph suitable for military use; tests of development models; studies of odography performance in various types of transport and combat vehicles; and the development and test of production models. The odograph automatically plots the course taken by a moving vehicle and will be of value for the following types of operations: Tactical reconnaissance, engineer reconnaissance, navigation and dead reckoning, rendezvous of combat and supply units, artillery surveys and technical control of movements. Appendices include extracts from reports of tests by boards of other arms and services, military characteristics, compass theory and description of operation of the odograph. Report includes photographs, schematic diagrams and a wiring diagram.

U. S. CHEMICAL WARFARE SERVICE. Vapor pressure determination. (CWS Field Lab. Memo 1-3-2) Off. Pub. Bd., Report, PB 11585. 1943. 3 p. Price: Microfilm - 50¢ - Photostat - $1.00
Report gives the description and method of operation of apparatus for vapor pressure determination and calculations for the correction of pressure readings. The apparatus consists of a vacuum line capable of producing a vacuum of 1 mm., a mercury manometer in the vacuum line, one thermometer, and one oil-bath with stirrer.

WAITS, JAMES K. The hypersensitization of film emulsions by means of organic acid vapors. (Army Air Forces. Engineering Division. TSEPL-4-680-66-3). Off. Pub. Bd., Report, PB 7548. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
A test indicated that it is possible to increase the speed of Army Air Forces Type V class L and Type 1B class N films by treating the exposed and undeveloped film with isopropyl alcohol containing 1% of 50-50 formic-acetic acids.

WANDALL, O. L. Automatically stabilized camera mount, Type A1SB (Minneapolis Honeywell). (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-40-2). Off. Pub. Bd., Report, PB 10028. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Mount proved satisfactory in flight tests (reported in Memorandum Report EXP-M-59-675-40-1), but no reports of service tests were available.

WANDALL, GEORGE L. Hand-held mount for K-24 camera. (Army Air Forces. Engineering Division. TSEPL-4-675-125-63). Off. Pub. Bd., Report, PB 9927. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
A combination fixed vertical and hand-held oblique mount for the K-24 camera was developed to meet the military requirements for liaison type aircraft.

WEITZEN, WILLIAM. D-8 Thermostatic oil temperature regulator valve. (Army Air Forces. Experimental Engineering Section. EXP-M-57-623-129). Off. Pub. Bd., Report, PB 8213. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The D-8 valve was developed for the purpose of overcoming several shortcomings of the standard type D-5 valve, mainly inadequate flow capacity for high flow oil engines, and to provide a "safety release" feature which would permit continuous operation of the engine with the maintenance of low oil temperatures after a thermostatic element failure. Tests indicated that the D-8 valve was satisfactory for immediate service use and it was recommended, in view of the urgent need, that these valves be made immediately available.

WHITMAN, HAROLD E. Visit to Los Angeles, California to investigate the process of Synchrome, Inc. (Army Air Forces. Experimental Engineering Section. EXP-M-59-677-14-3). Off. Pub. Bd., Report, PB 11623. 1940. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
The print process of Synchrome, Inc. is apparently based on the wash-off dye imbibition principal, but being of a highly secret nature, no definite information could be secured at the time this trip was made. Since this process would require either special equipment or special additions to present equipment the present Air Forces equipment is considered more satisfactory.

WIRTSCHAFTER, Z. T. Fungus study (Army Air Forces. Engineering Division. TSEPL-4-675-164-2). Off. Pub. Bd., Report, PB 7559. 1945. 1 p. Price: Microfilm - 50¢ - Photostat - $1.00
The purpose of this memorandum is to report on work accomplished in a study concerning the preventative measures to be taken to protect photographic equipment and supplies against the damage caused by fungi, and to close out this project. The conclusions reached in the fungus study are contained in a previous Memorandum Report. Upon return of containers in which photographic material was packed and shipped to a tropical station to undergo storage another report will be written.

WOLOSHIN, LEOPOLD. Service test of Kodatron speedlamps. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-48-1). Off. Pub. Bd., Report, PB 11952. 1941. 1 p. Price: Microfilm - 50¢ - Photostat - $1.00
Eastman Kodak Company has been unable to produce the above mentioned equipment commercially because of the shortage of materials.

WOOD, R. E. and SHOEMAKER, D. P. The Pauling oxygen meter, to June 30, 1944. (OSRD Report 4361). Off. Pub. Bd., Report, PB 9417. 135 p. Price: Microfilm-$1.50 - Photostat-$9.00
This report describes the development of the Pauling oxygen meter as a fairly rugged, compact, and portable instrument which indicates continuously the partial pressure of oxygen in gas mixtures which are caused to flow through it. Its operation is based on the high magnetic susceptibility of oxygen. The instrument was conceived by Professor Linus Pauling and developed by the C.I.T. The report gives the history, discusses general principles of the operation, and describes the basic developments and improvements of the instrumental. It contains drawings and photographs, and the detailed analysis of operation is illustrated by graphs. This is a final report under contract with the California Institute of Technology.

WOODFORD, E. B. Conferences on lenses with Dr. James G. Baker, Harvard College Observatory. (Army Air Forces. Engineering Division, TSEPL-4-680-71-7). Off. Pub. Bd., Report PB 7696. 1945. 4 p. Price: Microfilm-50¢-Photostat-$1.00
The report enumerates projects concerning lenses under discussion at the above mentioned conference and suggests priorities for these projects.

WOODFORD, E. B. Defender photo supply company photographic filters. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-41-6). Off. Pub. Bd., Report, PB 7574. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
In general the optical quality, color and physical characteristics of subject filters are satisfactory and comply with Army specifications.

WOODFORD, E. B. Eastman Kodak Company 8-inch f/1.5 lens. (Army Air Forces. Engineering Division. ENG-59-341-413-3). Off. Pub. Bd., Report, PB 7347. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Appendix gives results of tests which were conducted on the subject lens. This lens was developed at the request of RCAF and three lenses were built. One was for the RCAF, one for the RAF, and one for the AAF. Will not reproduce well.

WOODFORD, E. B. Eastman Kodak Company glass filters. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-41-9). Off. Pub. Bd., Report, PB 7572. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Only one of the ten filters is entirely satisfactory. Others show too great a decrease in resolving power.

WOODFORD, E. B. Eastman Kodak 6-inch f/2.8 aero Ektar lens. (Army Air Forces. Engineering Division. TSEPL-4-680-71-11). Off. Pub. Bd., Report, PB 7663. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Discusses the development of a 6 inch f/2.8 lens intended eventually to replace the standard 7 inch f/2.5 lens. The lens which was produced was not satisfactory for Army Air Forces use. Results of various tests on the two lenses are recorded in the appendix.

WOODFORD, E. B. Effect of Libbey-Owens-Ford glasses on resolving power. (Army Air Forces. Experimental Engineering Section. EXP-M-59-675-39-4). Off. Pub. Bd., Report, PB 10012. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes the method of testing several samples of Libbey-Owens-Ford glasses designed for use in airplane windows to determine if their optical quality would be satisfactory.

WOODFORD, E. B. and NIKREMBERG, R. N. Effects of temperature and pressure on the focus of aerial camera lenses. (Army Air Forces. Engineering Division, TSEPL-4-680-71-4). Off. Pub. Bd., Report, PB 7693. 1943. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
After summarizing and recording available data on the effect of barometric pressure, and temperature, on the focus of aerial cameras, it was recommended that a project be initiated to cover the development of a long focus camera which will not be affected by ambient temperature and pressure This can be accomplished by installing the camera in a hermetically sealed and well-insulated container having a glass window. The pressure would always be constant (normal atmosphere) and sufficient thermostatically controlled electric heat could be supplied to maintain the camera temperature at any selected value. Focus shift of aerial cameras appears in Appendix A. Appendix B records changes in flange focus with pressure and temperature. Curves illustrating the auto-collimator system of measurement of focus changes are also given.

WOODFORD, E. B. Focusing posts for aerial camera lenses. (Army Air Forces. Engineering Division. TSEPL-4-680-71-2). Off. Pub. Bd., Report, PB 7690. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report recommends that the lens maker be required to supply focusing posts of the correct length with each lens.

WOODFORD, E. B. General Scientific Corporation 24" f/6 photographic lens. (Army Air Forces. Engineering Division. ENG-59-341-413-9). Off. Pub. Bd., Report, PB 7643. 1943. 3 p. Price: Microfilm-50¢ - Photostat- $1.00
The second sample of subject lens satisfies resolving power requirements of Air Forces specifications up to 15°. This is sufficient for covering 9" x 9" negative but as the lens is now mounted it cannot be used in the K-17 camera with A-6 filter nor in the K-22 camera with filter heater and/or filter.

WOODFORD, E. B. Goerz Hypergon lenses. (Army Air Forces. Engineering Division, TSEPL-4-680-71-6). Off. Pub. Bd., Report, PB 7695. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A 90 mm. Goerz Hypergon lens which was tested was characterized by high resolving power out to 85° of the optical axis and by low distortion. It was considered to be of too low a speed for use in military aerial mapping photography. Results of the resolving power and distortion tests are shown in Appendix A.

WOODFORD, E. B. Harvard College Observatory 4 inch, f/2.8, wide angle lens, in "Spherical shell" camera, and with enlarger. (Army Air Forces. Engineering Division. ENG-59-680-20-45). Off. Pub. Bd., Report, PB 9919. 1944. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes the 4-inch f/2.8 wide-angle lens, the camera and projector. Several disadvantages for this camera were mentioned and it was recommended that work should be continued on the 6-inch f/3.5 lens and camera as a possible substitute for this camera. Photographs.

WOODFORD, E. B. Harvard College Observatory 36-inch f/8 9 x 18 inch telephoto lens. (Army Air Forces. Engineering Division. TSEPL-4-680-71-9). Off. Pub. Bd., Report, PB 9921. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
The subject lens was tested to determine suitability for Army Air Forces use for high altitude aerial photography. It was found satisfactory for use in K-18, K-17 and K-22 aerial cameras. Description of the lens, test results, and photographs appear in the appendix.

WOODFORD, E. B. Harvard College observatory 36" f/8 9" x 18" telephoto lens no. T7-Y7-002. (Army Air Forces. Engineering Division. TSEPL-4-680-71-12). Off. Pub. Bd., Report, PB 9922. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
This is the second model of a 36" telephoto lens. The first model was covered in Memorandum Report TSEPL-4-680-71-9. This second model proved more satisfactory than the first model. It was concluded that subject lens is equal or superior in performance to the German 75 cm. f/6.3 telephoto lens and that it is superior to all 36-inch telephoto lenses that have been tested in the laboratory. Appendix contains description, test results and photographs.

WOODFORD, E. B. Kodak anastigmatic 161 mm. f/4.5 lenses. (Army Air Forces. Engineering Division. ENG-M-59-680-20-26). Off. Pub. Bd., Report, PB 7349. 3 p. Price: Microfilm -50¢ - Photostat-$1.00
The subject lens failed to satisfy Army Air Forces requirements. The appendix contains data relative to the resolving power of this lens compared with the product of another manufacturer.

WOODFORD, E. B. Photographic filters submitted by Polaroid Corporation. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-41-5). Off. Pub. Bd., Report, PB 7582. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Results of resolving power tests and humidity and temperature tests are given in the appendix. Only two of the filters were considered to be satisfactory from standpoint of optical qualities. The result of this poor optical quality was determined to be poor surfacing. The red filters were satisfactory as to color. The yellow filters are quite light.

WOODFORD, E. B. Review of status of development of new aerial photographic lenses. (Army Air Forces. Photographic Laboratory, ENG-59-680-20-49). Off. Pub. Bd., Report, PB 7688. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A list in the appendix indicates the present status of the various lens projects initiated under Expenditure Order 680-1-20.

WOODFORD, E. B. 7-inch f/2.5 lenses exhibiting striae submitted by Eastman Kodak Company on May 8, 1943. (Army Air Forces. Engineering Division. ENG-59-341-1). Off. Pub. Bd., Report, PB 7348. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The lenses were examined and found to exhibit a certain amount of striae but it apparently had no effect on the photographic performance of the lenses.

WOODFORD, E. B. 60" f/6 U-type telephoto lens, Harvard College Observatory. (Army Air Forces. Engineering Division, ENG-59-680-20-48). Off. Pub. Bd., Report, PB 7687. 1944. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
After complete testing it was decided that subject lens was satisfactory for Army Air Forces use. Appendix contains description of lens and resolving power in lines per mm. Exhibit A is missing from report. Will not reproduce well.

WOODFORD, E. B. 60" f/6 U-type telephoto lens, Harvard College Observatory. (Army Air Forces. Engineering Division. ENG-59-680-20-48 (1)). Off. Pub. Bd., Report, PB 9920. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This addendum to memorandum report ENG-59-680-20-48 shows a schematic drawing of the optical system of subject lens.

WOODFORD, E. B. Substitutes for optical glass for photographic lenses. (Army Air Forces. Engineering Division, ENG-59-680-51-3). Off. Pub. Bd., Report, PB 7666. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The four items developed and tested under this expenditure order were: (a) 8" f/3.2 and 7" f/2.8 plastic lenses developed by Curtis laboratories, Los Angeles; (b) 7" f/2.5 plastic lens with field flattener, developed by Polaroid Corp., Cambridge, Mass.; (c) 7" f/2.3 ophthalmic glass lens, developed by Harvard College Observatory, Cambridge, Mass.; (d) Type A-4 view finder for fighter type airplanes.

WOODFORD, E. B. Thomas color camera and projector and Thomas auxiliary lenses. (Army Air Forces. Experimental Engineering. EXP-M-59-677-18-1). Off. Pub. Bd., Report, PB 7657. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This report summarizes the history and progress made in investigating the subject equipment and concludes that lack of results makes it desirable to close out expenditure order.

WOODFORD, E. B. Type III filters submitted by Eastman Kodak Company. (Army Air Forces. Experimental Engineering Section. EXP-M-59-680-41-4). Off. Pub. Bd., Report, PB 7581. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The filters were found to be unsatisfactory from standpoint of resolving power and were returned for resurfacing.

WOODFORD, EDWARD B. Visit to Bausch and Lomb Optical Company re experimental lenses and lens and filter specifications. (Army Air Forces. Engineering Division. ENG-59-680-20-43.) Off. Pub. Bd., Report, PB 11921. 1944. 3 p. Price: Microfilm - 50¢ - Photostat - $1.00
As a result of the visit the following recommendations were made: That the method of determining "focal plane position for best average overall definition" be clearly defined in Specification 75-150, "Lenses, Photographic, General Specification for "; that the resolving power requirements of Specification 75-216, "Lens, Photographic, 40-inch F/8 Telephoto", be changed to conform to the recommendations of subject company; that the vignetting requirement of Specification 75-214, "Lens, Photographic 20-inch F/5.6", be changed from 4:1 to 5:1.

WOODFORD, EDWARD B. Visit to Eastman Kodak Company. (Army Air Forces. Engineering Division. ENG-59-680-20-44). Off. Pub. Bd., Report, PB 11922. 1944. 5 p. Price: Microfilm - 50¢ - Photostat - $1.00
It was learned that because of inadequate inspection and failure to comply with requirements of specifications, many of the three thousand units of the 5-3/4" filters made by Eastman were unsatisfactory for Army Air Forces use. There is little likelihood that much improvement in the delivery schedule of the 8" F/1.5 lenses can be made. The 40" F/6.3 telephoto lens has been completed and mounted in an aluminum test barrel. Indications are that considerable improvement in the technique of making positive transparencies for the photographic bombing trainer can be achieved.

WOODFORD, EDWARD B. Visit to Parkersburg, West Virginia, Division of Corning Glass Company. (Army Air Forces. Engineering Division. ENG-M-59-680-20-34). Off. Pub. Bd., Report, PB 11945. 1943. 1 p. Price: Microfilm - 50¢ - Photostat - $1.00
The purpose of this visit was to inspect the optical glass factory of the Corning Glass Company and to discuss with technicians of that company the problems of glass for the Harvard 40-inch f/5 telephoto and 7 inch f/2.5 lenses.

WRIGHT, H. R. Air filter for Type A-5 dryers. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-84-3). Off. Pub. Bd., Report, PB 7584. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes a filter made by the Invincible manufacturing Company, Dover, Ohio.

WRIGHT, H. R. Conduct a study and redesign of A-2A print washer and stand. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-35-1). Off. Pub. Bd., Report, PB 11904. 1942. 6 p. Price: Microfilm - 50¢ - Photostat - $1.00
This report describes the A-2A print washer and describes the testing of the washer to determine its suitability for Air Forces use. Test data are included in the appendix.

WRIGHT, H. R. Fairchild film splicing and viewing table. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-38-2). Off. Pub. Bd., Report PB 11946. 1942. 1 p. Price: Microfilm - 50¢ - Photostat - $1.00
Tests have shown that the splices made with waterproof splicing tape are superior to the type splice made with the Fairchild film splicing and viewing table.

WRIGHT, HARRY R. Portable unit for processing 100-foot lengths of 16 mm and 35 mm film. (Army Air Forces. Engineering Division. ENG-M-59-681-75-2). Off. Pub. Bd., Report, PB 11885. 1943. 5 p. Price: Microfilm - 50¢ - Photostat - $1.00
Tests indicated that the bread-board model of a 35 mm developer which was submitted by Agfa Ansco Corporation for approval would be satisfactory if recommended changes were made. Photographs show interior and exterior of the tank.

WRIGHT, H. R. Service test to determine suitability of new quick-work equipment for the use of the Army Air Forces. (Army Air Forces. Experimental Engineering Section. EXP-M-59-678-22-2). Off. Pub. Bd., Report. PB 11634. 1942. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00
Service test conducted on 8 x 10 inch quick-work equipment using the negative-print process. This equipment is designed for operation without the use of a dark room, and is intended to be sufficiently light, compact and convenient in manipulation to permit its use in aircraft. The equipment is designed to be used in conjunction with the standard K-3B spotting Camera (12-inch cone) equipped with Type B-1 magazine. The Type F-3 developer and Type A-9 printer were found to be satisfactory except for minor faults which could be corrected, etc. It was judged not satisfactory for Army Air Forces use, but that development work of this process and equipment be continued on a low priority.

WRIGHT, HARRY R. Spraymatic developing machine. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-26-2). Off. Pub. Bd., Report, PB 9928. 1942. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
At the conclusion of tests it was decided that spray methods for development of aerial roll film are not satisfactory. Formulae for developers are given in appendix. Photographic model of the unit is included.

WRIGHT, H. R. The Fairchild film splicing table. (Army Air Forces. Experimental Engineering Section. EXP-M-59-681-38-1). Off. Pub. Bd., Report, PB 11947. 1941. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
Describes the Fairchild film splicing table. It is concluded that this equipment is not suitable for the use of the Air Forces.

WRIGHT, H. R. Washer, photographic print type A-2A. (Army Air Forces. Engineering Division. ENG-59-681-24). Off. Pub. Bd., Report PB 11906. 1943. 6 p.
Price: Microfilm - 50¢ - Photostat - $1.00
This report gives a complete description of the print washer manufactured by the Liberty Electric Company. This washer is usable but not wholly satisfactory for Army Air Forces use. Photographs of the washer and the motor drive are appended to the report. See PB 11908.

WRIGHT, H. R. Washer, photographic, type A-2A. (Army Air Forces. Engineering Division. ENG-M-59-681-18). Off. Pub. Bd., Report, PB 11908. 1943. 3 p.
Price: Microfilm - 50¢ - Photostat - $1.00
Describes the sample A-2A print washer which was inspected at the Liberty Electric Company, Indianapolis, Ind. The washer was found to be satisfactory. Report will not reproduce.

WURZBURG, F. L. Color printing process for camouflage detection. (Army Air Forces. Experimental Engineering Section. EXP-M-59-677-14-4). Off. Pub. Bd., Report, PB 10019. 1942. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
This report discusses two general types of camouflage detection, the "Wide-band" method represented by 3 experimental films, and the "Narrow-band" method represented by a pair of films to be exposed simultaneously. Appendix contains spectrophometric curves of some typical camouflage paints compared with that for a typical chlorophyll sample.

RUBBER AND RUBBER PRODUCTS

BAKER, W. O., WALKER, R. W. and PAPE, N. R. Interrelations of sol and gel in GR-S polymers (Report presented at the CR-Meeting, ORD, New York, March 14, 1944). (War Production Board. Office of the Assistant Rubber Director for Research and Development of Synthetics. General Report 16). Off. Pub. Bd., Report, PB 9687. 1944. 41 p. Price: Microfilm - 50¢ - Photostat - $3.00
Ultimate processibility of a variety of commercial GR-S rubbers was evaluated by 25°C breakdown on hand-tight rolls. Toughest gels (GR-S 85) were completely converted in 3 minutes into sol. Thus, practical processing has the background that virtually all commercial GR-S can be broken down. Sol-gel data, given in 10 graphs, confirm quantitatively that mill breakdown is the predominant chain scission reaction. Inherent quality of GR-S polymers can be utilized in the final stocks, such as tires, only by precise compromise of mildest hot processing with mixing and plastication necessary for extrusion and molding.

BAKER, W. O. and MULLEN, J. W., II. Measurement of viscosity of GR-S solutions. (War Production Board. Office of Assistant Rubber Director for Research and Development of Synthetics. General Report 14). Off. Pub. Bd., Report, PB 9685. 1944. 23 p. Price: Microfilm-50¢ - Photostat-$2.00
The GR-S sols are accurately characterized by their dilute solution viscosities, when the experimental variables are adequately controlled. Such viscosities are, therefore, a factor in quality control. The relative viscosity, η_r, of solutions of GR-S polymers is markedly decreased with increase of the shearing stress, τ, in capillary viscometers. This is further evidence of large shape anisotropy or chain-like structure, of soluble GR-S molecules. A type of viscometer is described suitable for investigation of the effects of capillary radius and length on the flow of GR-S solutions. $\frac{\eta_{sp}}{c}$ decreases as c increases, up to 10 or 15% solutions of essentially linear polymers. But, for branched or netted particles, $\frac{\eta_{sp}}{c}$ may show zero or positive slope when plotted against c. This provides a first approach to detection of branching or marked non-linearity in GR-S polymers. Concentrated solution or dispersion viscosities (10-15% range) furnish most delicate information on non-linearity or flow properties of raw polymers. For example, for two GR-S polymers whose Mooney reading differed about 6%, the concentrated solution viscosities differed about 214%. Diagrams of apparatus, and tables and graphs showing results obtained are included.

DEBYE, P. P. Analysis of GR-S latex by light scattering. (War Production Board. Office of Assistant Rubber Director for Research and Development of Synthetics. General Report 12). Off. Pub. Bd., Report, PB 9683. 1944. 58 p.
Price: Microfilm - $1.00 - Photostat - $4.00
Light scattering can be used as a method for the determination of particle sizes in colloidal solution. The phenomenon can be explained as an interference effect and in this particular investigation it has been used to give information about the diameters of latex particles, which generally are considered to be spherical. The phase differences of light rays coming from different parts of a small particle will never be appreciable, thus a symmetrical angular intensity distribution of the scattered light will be observed. In the case of larger particles, the phase differences of the scattered light rays are appreciable and will become larger the larger the scattering angle, which is measured against the direction of the primary parallel light beam. A study of these intensity distributions of latices of different polymerization times has been made and corresponding latex-particle diameters have been evaluated. The results can be expressed qualitatively in saying that in the first hour or two of the polymerization particle diameters increase rapidly until they reach a maximum, then gradually decrease to a minimum at about 2/3 polymerization time and then show possibly a slight rise towards the end of the polymerization period. A second method of size determination, based on a theoretical equation for the turbidity developed by D. P. Debye has also been applied. A comparison of the two methods shows that diameters resulting from angular distribution measurements are slightly larger, but of the same order, than those obtained by the second method. Report contains photographs, diagrams, tables and graphs.

DEBYE, P. and ELYASH, E. S. Depolarization in diluted solutions. (War Production Board. Office of Assistant Rubber Director for Research and Development of Synthetics. General Report 7.) Off. Pub. Bd., Report, PB 9670. 1944. 13 p. Price: Microfilm - 50¢ - Photostat - $1.00
In a preceding paper by P. Debye, "Scattering of light in solutions" (PB 9678), a formula was developed for expressing the scattered intensity, and a method for determining the constant β in a special case was formulated by calculating the fluctuations in concentration by a general statistical method which involves the evaluation of the work which has to be supplied to the solution in order to change its concentration. If we want to analyse the general case in the same way we have to look out for a reversible way of changing the isotropic element of volume of the solution into an anisotropic state, which can be done with the help of electric and magnetic fields which induce double refraction. However, the experimental arrangement is rather involved, and from a practical point of view it seems advisable to follow another method of calculation, which has the disadvantage that it can only be applied to diluted solutions. On the other hand it requires nothing more than the observation of the depolarization - coefficient in a direction perpendicular to the primary beam. This method is explained in this report.

DEBYE, P. Light scattering in solutions. Light scattering in solutions (abstract). (War Production Board. Office of Assistant Rubber Director for Research and Development of Synthetics. General Report 5 and 5A). Off. Pub. Bd., Report, PB 9673. 1944. 17 p. Price: Microfilm - 50¢ - Photostat - $2.00

The scattering of light in solutions becomes more prominent the smaller the number of ultimate particles is in which a definite amount of solute has been broken up in the course of the solution process. Since with increasing intensity experimental procedures for the observation of the scattering become easier to handle the application of methods of optical analysis to solutions of polymers seems appropriate. This report deals with some of the conclusions which can be drawn from the results of such measurements. The light scattering in colloidal solutions depends primarily on an interference effect originating at the suspended particles. The quantity which is characteristic for such an effect is the quotient of a length measuring the size of the particle and the wave length of the primary light. Light scattering experiments furnish an easy method for the determination of high molecular weights. This paper was also published in the Journal of Applied Physics, V. 15, April 1944, pp. 338-342.

DEBYE, P. Molecular weight distribution from turbidity measurements. (War Production Board. Office of the Assistant Rubber Director for Research and Development of Synthetics. General Report 17). 1944. Off. Pub. Bd., Report, PB 9688. 1944. 15 p. Price: Microfilm - 50¢ - Photostat - $1.00

A highly theoretical consideration as to the relationship between molecular weight distribution and turbidity (fractional loss of intensity per cm.) can be summed up in the following manner: If the reciprocal specific turbidity is plotted as a function of polymer concentration, for every concentration the corresponding value of ψ can be read which is a function of the concentration and is independent of the individual particle-masses. If a mixture is analyzed in this way and the specific turbidity itself (not its reciprocal) plotted as a function of ψ, then the coordinates of the curve so obtained are represented in form of a power series of ψ, the coefficients of which are the moments of the distribution curve.

DEBYE, P. Scattering of light in solutions. (War Production Board. Office of Assistant Rubber Director for Research and Development of Synthetics. General Report 6). Off. Pub. Bd., Report, PB 9678. 1944. 16 p. Price: Microfilm - 50¢ - Photostat - $2.00

Observations of the intensity of scattering can be used as a method for the determination of molecular weights. This method is especially appropriate in the case of high molecular weights. This note deals with the underlying theory and is divided into two parts. In part A the scattering intensity is calculated for a volume in which the index of refraction undergoes irregular fluctuations. This part is just an application of Maxwell's electromagnetic theory and proceeds along the line followed by A. Einstein. In part B the strength of the fluctuations is calculated, using a statistical method which again is essentially the same as that used by Einstein. Combination of the results of parts A and B leads to a formula for the intensity of scattering as a function of the concentration, which shows that an intimate connection exists between the scattered intensity and the osmotic pressure of the solution. The relation in question therefore leads to a method for the determination of molecular weights, which does not involve any empirical constants of the kind which have to be introduced, i. e. in Standinger's Viscosity method.

STRAUSS, U. P. Depolarization due to secondary scattering. (War Production Board. Office of Assistant Rubber Director for Research and Development of Synthetics. General Report 13.) Off. Pub. Bd., Report, PB 9684. 1944. 4 p. Price: Microfilm - 50¢ - Photostat - $1.00

In a previous paper by P. Debye and E. S. Klynsh, "Depolarization in dilute solutions" (PB 9679), the ratio of the scattered intensity to the primary intensity was shown to be affected by a correction term known as Cabannes' factor. To determine this factor and also to obtain some information concerning the optical properties of the dissolved particles, the depolarization of several latex solutions was determined by visual photometry by the method of Cornu. It was observed that the depolarization increased strongly with the concentration of the dissolved particles. To obtain quantitative results the depolarization of one latex sample was measured at different concentrations. The part of the depolarization that changes with the concentration is a measure of the ratio of secondary to primary scattering. A detailed investigation shows that the depolarization can be expressed entirely as function of the turbidity (defined as the fractional decrease of the incident intensity over unit distance) and the dimensions of the part of the solution which is illuminated by the incident light beam. Thus for a circular light beam of radius a, the depolarization is given by the formula

$$\rho = \rho_0 + \tfrac{3}{4}a\tau - \tfrac{1}{16}(a\tau)^2 + \tfrac{17}{128}(a\tau)^3$$

A similar model formula has been developed for a rectangular beam. With the aid of the theory, we find by extrapolation that ρ_0 for the latex is not greater than 1.8%. Report includes a graph and table.

U. S. ARMY AIR FORCES. 47-inch smooth contour casings on B-26 airplanes. (Engineering Division EXP-M-56-3948). Off. Pub. Bd., Report, PB 7373. 1941. 1 p. Price: Microfilm-50¢ - Photostat-$1.00

This incomplete report is concerned with the failure of B-26 tires.

U. S. WAR PRODUCTION BOARD. OFFICE OF THE RUBBER DIRECTOR. POLYMER RESEARCH BRANCH. Instructions for the determination of gel content, swelling volume of gel and intrinsic viscosity of sol in GR-S. Off. Pub. Bd., Report, PB 9682. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00

The purpose of these instructions is to provide a set of directions for the determination of gel, swelling volume and intrinsic viscosity in GR-S and to indicate what procedures should be followed in sampling and in the preparation of the sample. No attempt is made to go into detail in regard to the techniques involved. Reference should be made to the original reports, which are listed for this information. An appendix discusses cleaning the gel apparatus, and determination of the weight of the benzene film. Diagrams are given of the rubber extractor and the Ostwald viscosimeter.

WHITE, J. V. and FLORY, P. J. Infrared spectra and structure of synthetic rubbers. (War Production Board. Office of Assistant Rubber Director for Research and Development of Synthetics. General Report 10). Off. Pub. Bd., Report, PB 9681. 1944. 22 p. Price: Microfilm-50¢ - Photostat-$2.00

The infrared spectra of a number of synthetic rubbers have been investigated by personnel of the Standard Oil Development Company for the two-fold purpose of obtaining information regarding fundamental polymer structure, and of establishing methods of identification and analysis of rubber and synthetic rubber mixtures. To date, complete spectra of Buna S, Perbunan, Buna-85, Butyl rubber, Polybutene and natural rubber have been measured and analyzed. Indications regarding polymer structure have been deduced from the spectra. The infrared method has been demonstrated as a means for establishing the nature of the chemical bonds existing in synthetic rubber molecules. Absorption bands which are characteristic for each of the following have been found: Natural rubber, Buna S, Perbunan, Buna-85, and Butyl rubber (or Polybutene). These bands may be used for identifying any of the above in an unknown rubber, or for their quantitative determination in a mixture composed of a combination of the above rubbers. An appendix discusses correlations between molecular structures and spectra. Report includes graph.

STONE, CLAY, AND GLASS PRODUCTS

ROWLAND, W. M. The German abrasive industry. (BIOS Final Report 113). Off. Pub. Bd., Report, PB 7904. n.d. 69 p. Price: Microfilm - $1.00 - Photostat - $5.00

This report covers the German abrasive industry, manufacturing methods, statistics of production, commercial policies, and work done in each abrasive factory and abrasive wheel factory.

TEXTILES AND TEXTILE PRODUCTS

BUKLER, W. C. Type B-10 nylon harness. (Army Air Forces. Engineering Division, TSEAL G-9-375). Off. Pub. Bd., Report, PB 11663. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
This harness was subjected to eighty-nine shock tests ranging from 1164 to 8955 lbs. without failure of the webbing. It is greatly superior to any harness previously tested. Appendix I of Memorandum Report ENG-M-54-670-45NNN, which shows the low strength of cotton harnesses, is given for comparative purposes. Tables and photographs are included.

BURSTEIN, FRANK I. Jungle hammock assembly. (Army Air Forces. Engineering Division, TSEAL-5F1-672-9-371). Off. Pub. Bd., Report, PB 11665. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Description of the assembly of a sample hammock made of rejected nylon parachute panels is given.

GODDARD, WILLIAM L. and VAN DILLA, MARVIN. Air layers: Thermal properties when bounded by surfaces of high and low emissivity. (Quartermaster Corps. Climatic Research Laboratory Report 4589, 4590). Off. Pub. Bd., Report, PB 8251. 1945. 14 p. Price: Microfilm-50¢ - Photostat-$1.00
By means of a study of air cells it was found possible to design an unfilled, inflatable sleeping-bag pad possessing from 5 to 6 clo units of insulation protection. A bar frame was used for this study to enable the experimenter to build up a series of air layers of various thicknesses, baffling arrangements, and separating fabrics, respectively. The thermal insulating value of the air layers was measured at a mean air-space temperature of about plus 120°F. It was learned that air layers reach a maximum insulation value when about ½-inch thick. Beyond this thickness, no increase in thermal insulation value occurs. An increase of about 45% in the thermal insulation value of the air space may be obtained by breaking up the space with triangular-shaped baffles. An increase of 80% may be gained by coating the bounding surfaces with a reflecting aluminum paint. Complete coverage of the bounding surfaces with large aluminum particles insures optimum reflecting properties. Photographs, tables, and diagrams are appended.

HOLGATE, B. A. Parachutes and parachute materials used in Germany (FIAT Final Report 465). Off. Pub. Bd., Report, PB 3882. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
The object of this investigation was to determine the type of parachute materials used and the advancements made in parachute design by Germany during the war. Parachutes, other than human escape chutes, were constructed from cuprammonium rayon, but viscose rayon was used when the cuprammonium type was not available. Human escape parachutes were generally made from silk, but experimental chutes were constructed from Perlon. The development of the ribbon type parachute was begun in 1937 by Dr. Theodore Knacke. The design of the ribbon type parachute accomplished the increase in porosity without increasing the permeability of fabric beyond the safety point of 1600 liters per second per square meter of fabric. The guiding surface type parachute is definitely more stable and more resistant to drift than the standard type construction. The rate of descent of a guiding surface type parachute is approximately the same as that for a conventional type parachute. Construction data and specification requirements for parachute materials are set forth in Appendix I. A general discussion of the production of parachute materials is set forth in Appendix II. The ribbon parachute is discussed in Appendix III, and the design, operation and uses for the guiding surface parachute are set forth in Appendix II

HUDGIN, DONALD E. and VIVADELLI, HUGO E. German nylon protective sheets. (Chemical Warfare Service. Captured Material Technical Report, CMTR 34). Off. Pub. Bd., Report, PB 11315. 1944. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
German nylon protective sheets were examined and tested, and the data presented in tabular form. These sheets are for protection against vesicant contamination as ground sheets, cover for equipment, or for personal protection against spray. A comparative table of the penetration tests for the nylon and the U.S. protective cover spaque indicates that the U.S. cover is more effective when dry, but the efficiency of the cover decreases in the presence of moisture while that of the nylon increases. A sample of the nylon sheet is appended.

LEE, LARRY. Wire flexion test. (Army Air Forces. Engineering Division, TSEAL-5F-672-3-146). Off. Pub. Bd., Report, PB 11676. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a report on the wire flexion test of Rytenso Tinsel wire submitted by General Electric Company for use in the electrically heated casualty blanket. A table is included.

LEISENRING, J. G. M. The fibrous glass textile industry. (FIAT Final Report 461). Off. Pub. Bd., Report, PB 3880. 1945. 27 p. Price: Microfilm-50¢- Photostat-$2.00
This report covers an investigation of the fibrous glass textile industry in Germany at the close of World War II. Contrary to experience in America, uses for fibrous glass in Germany have not been developed beyond the original applications; i.e., wool fibers have been used only for domestic and industrial insulating purposes (houses, buildings, boilers, turbines, steam pipes, locomotives, Diesel engines, etc., while textile fibers have been used for only two purposes - electrical insulation and an asbestos substitute. Of the various basic processes described, the Owens and Schuller processes seem the most economically and technically sound. It is questioned whether the Gossler and Hager processes have any long range value to the German economy, and it seems rather evident that they have no value whatever to the United States. No interesting technical developments in machinery or processes in connection with production of basic fiber have been observed. The carding and spinning of the Schuller fiber by Hardt-Pocorny Company is interesting technically though of doubtful value economically to the American industry. Other fabricating processes observed such as weaving were less than ordinary based on American standards of equipment, output, and product quality. Names, locations and historical data on plants visited are given in the appendix.

MORIARTY, H. S. Test of electrically heated casualty blanket Q-1 conducted by Test Branch, Personal Equipment Laboratory. (Army Air Forces. Engineering Division, TSEAL-5F-672-4A). Off. Pub. Bd., Report, PB 11674. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this test was to determine the thermal protection under cold conditions of subject item as manufactured by Ben Greenholtz Co. Data obtained is inconclusive.

MURPHY, DANIEL T. Cold test on electrically heated liner for A-3 sleeping bag. (Army Air Forces. Engineering Division, TSEAL-5F-672-24). Off. Pub. Bd., Report, PB 11669. 1945. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Performance of the liner was found unsatisfactory in a test to ascertain whether it would maintain the comfort of a casualty at -40° for an extended period of time.

PICKLER, R.R. Modification of bag, arctic sleeping, type A-3. (Army Air Forces, Engineering Division, TSEAL-5F-672-8). Off. Pub. Bd., Report, PB 11673. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were conducted on this bag and the report recommend that it be continued for use by the AAF. The necessity for building an insulating mat of spruce boughs as a base for the bag was indicated.

WARD, KYLE, JR. Study of use of other materials than wood or cotton as sources of cellulose. (FIAT Final Report 490). Off. Pub. Bd., Report, PB 7755. 1945. 22 p. Price: Microfilm-50¢ - Photostat-$2.00
Straw cellulose pulp was manufactured by the Phrix-Gesellschaft in their plant at Wittenberge. This was the only

successful use of straw in this way. At Wittenberge there was a chain of three plants, a straw pulp plant, a staple fiber plant operating on the pulp and a food yeast plant utilizing the liquors from the pulp plant. The pulping process itself was in two stages, an acid hydrolysis for the pentosans and a sulfite cook thereafter. Many companies experimented with Arundo donax as a source of cellulose, but the only plant that carried on production (until destroyed by bombing during the war) was that of Snia-Viscosa. The pulp plant, Tor-Viscosa, was situated at Toresuino, Italy. The pulp was produced by a special bisulfite process and was used by the various plants of the Sni-Viscosa chain. Processes of pulping are described, and comments from other sources given. The following materials are discussed as sources for cellulose: Phragmites communis, rape straw, bast fiber wastes, potato vines and other materials. Miscellaneous information on companies visited includes data on the regenerated fiber industry, cellulose acetate firms, nitration plants and hydrolysis of cellulose. Names and addresses of firms visited in Austria, Germany and Italy are listed. Special attention is given to Alex. Wacker Gesellschaft fur Elektrochemische Industrie and the Wacker cellulose acetate process. The I.G. group controls 50 percent of this company. An extensive list of products manufactured at the Burghausen plant are presented. Visits to the I. G. Farbenindustrie Dormagen plant manufacturing cellulose acetate, and the research group at Weinheim (displaced from Ludwigshafen), and to the Lonza-Werke at Waldshut, and the Lonzona, A. G. at Sackingen, are described at length. A bibliography is included in this report.

TRANSPORTATION EQUIPMENT

Aircraft

German

ASPELIN, L. L. Laboratory test of electric motor removed from German booster pump, JU-88 airplane. (Army Air Forces Experimental Engineering Section. EXP-M-57-524-303). Off. Pub. Bd., Report, PB 7605. 1941. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
A report by the Experimental Engineering Section, AAF, Materiel Division, on the calibration of a German motor removed from the booster pump on the JU-88 airplane. Tests were made by the Delco Products Division of General Motors. A description of the motor and tabulated results of the calibration tests are given in appendices. (Photographs referred to in the report are missing from this copy.)

ASPELIN, L. L. Test of German fuel booster pump removed from JU-88 airplane. (Army Air Forces. Experimental Engineering Section, EXP-M-57-524-383). Off. Pub. Bd., Report, PB 7606. 1941. 16 p. Price: Microfilm-50¢ - Photostat-$2.00
This German fuel booster pump was tested for calibration and altitude by the Curtis Pump Company for the AAF. The high altitude performance of the unit would not be satisfactory under conditions of fuel temperature, rate of flow and rate of climb commonly encountered, while there is an excessive pressure drop through the pump when idle. Curves, tables, and diagrams. See also PB 7604.

ASPELIN, L. L. Test of German fuel booster pump removed from JU-88 airplane. (Army Air Forces. Experimental Engineering Section. EXP-M-57-524-406). Off. Pub. Bd., Report, PB 7604. 1942. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
AAF memorandum report on tests made by the Pump Engineering Service Corporation on a pump removed from a German plane. The pump was apparently used for transfer of fuel from the tank to the injector pumps on the engine. Tests indicate that the pump is unsatisfactory for altitude requirements and that it has excessive pressure-loss when fuel is passed through when idle. Graphs and diagram. See also PB 7606.

BARRETT, J. G. Test of Junkers fuel injection system. (Army Air Forces. Technical Report 4765). Off. Pub. Bd., Report, PB 8111. 1942. 94 p. Price: Microfilm-$1.00 - Photostat-$7.00
Study of Junkers fuel injection system, including fuel injector and its manifold pressure type automatic control, air vapor eliminator, injection lines and injection nozzles, which had been removed from a Jumo 211 engine. Its design and performance characteristics were studied and the possibility of adapting this system, using an automatic control unit of the manifold pressure type to an American-built engine. While this injection system is a product of excellent workmanship, it is heavier, contains more parts and requires more precision machine work than modern carburetors. The complete manifold pressure type control is satisfactory for an engine with a short period valve overlap, but for engines using relatively longer overlaps would function very poorly at engine idling conditions. The injection nozzle of the open type, is very simple and very successful. The installation on the engine between the cylinder tanks is very compact, permitting the use of short injection lines, but injector is subjected to considerable heating, and is inaccessible for servicing. The system could not be adapted to American engines without complete redesign because the automatic control is specifically designed for the Junkers Jumo 211 engine and would not deliver satisfactory fuel flows. Diagrams of the fuel injector and its component parts, and curves of its performance under testing are included, as well as 17 photographs of the whole system and its parts, for the use of manufacturers so that they may obtain information or ideas useful in the designing of their products.

BIOT, M. A. Messerschmitt advanced fighter designs. (Combined Intelligence Objectives Subcommittee. Item No. 5 File No. XXXII-41). Off. Pub. Bd., Report, PB 8677. 1945. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
Interrogation of W. Voigt, Chief of Messerschmitt Advanced Design Office, at Oberammergau, on their design plans for a fighter plane of improved performance, but with the same endurance and range as the Me 262. Project P-1101 for collecting experimental data on high speed aircraft shows pilot forward with fuel tank above the engine. P-1106 was similar to P-1101 except that the pilot sits at tail end of fuselage, behind the fuel tank. This had bad visibility for the pilot with no improvement in performance and was abandoned. P-1110, and P-1111 and P-1112 seek an optimum condition with respect to location of engine and general space arrangement, but had no conclusive results. Boundary layer suction was tried to improve engine air intake in the P-1110. Except for the landing gear housing, the wing is the same. P-1111 was a fighter with 1 jet engine and wings markedly swept back, an all metal plane with a cruising speed at 940 km/h. Sketches included.

CHILLSON, C. W. and others. Interrogation of Herin-Noak, Hagan & Bruckmann, BMW, Munich, on the controls for TL (turbo-jet) and PTL (Propeller-turbine-jet aircraft power plants. (Army Air Forces. Technical Intelligence Report I-85). Off. Pub. Bd., Report, PB 9781. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Control of fuel in the German turbo-jet type aircraft is fundamentally the same, being effected by a governor operating on a variable needle valve bypass in the fuel line from a turbine driven gear type fuel pump. The governor is operated by a throttle arrangement. Adjustable area jets control temperature and thrust under variable conditions. The report also gives a description of the operating technique of the turbo-jet engines. No propeller-turbine-jet power plants were inspected but plans for the proposed engines of this type are discussed. Four drawings are included.

KING, A. H. Interrogation of Dr. Amman concerning the BMW 801F high output engine. (Army Air Forces. Technical Intelligence Report I-85). Off. Pub. Bd., Report, PB 7841. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Changes in the 801 two stage engine to increase the power and altitude performance included increase in valve diameter and rate of opening with a 4% saving in friction HP. The 801 supercharger ratios as given show an increase in the models from A to F. To improve the supercharger efficiency, the diffuser was waterjacketed and connected through a pump to an air cooled radiator in the slip stream. Chrome plated cylinder bores ground and honed gave 300 hours of life at 2000 HP., when it became necessary to remove the chrome electrically and replate. This could be done 3 times. Exhaust valve heads were also plated by being suspended head down which caused the plate to be .06 to .08 mm. thick

on the lower side and.02 thick at the neck. It was hoped this would end exhaust valve troubles that had caused an estimated 50% to 60% of their spark plug troubles.

KING, A. H. Interrogation of Herr Adolf Muller, Dr. Karl Morghen, near Reutte, South of Immenstadt, and of Von Ohain of Heinkel-Hirth, Kolbermoor, Germany, regarding the bleed-off cycle for jet engines. (Army Air Forces. Technical Intelligence Report I-86). Off. Pub. Bd., Report, PB 7842. 1945. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Three different theories are expressed by the three men interviewed. Herr Muller suggests a by-pass in the compressor about midway, to bleed off some of the partially compressed air which is then burned in a separate burner provided with a separate jet. Dr. Morghen would bleed off about 40% of the air at the high pressure (burner) end of the compressor and replace this with equal weight of water. This would allow the jet to give the same thrust as before with lower turbine blade temperatures, and yet allow the use of an additional jet with added thrust. He believes that 130% gain in thrust could be obtained, with a possible fuel-air ratio of 15:1. Von Ohain believes it would be very difficult to design a combustion chamber for use with and without water and that it would become large and heavy.

MORRIS, R. H. and McDONALD, GEORGE C. Interrogation of Dr. Knackstedt, regarding wind-tunnel tests of Ram-jets (Lorin-ducts). Luftfahrtforschunganstalt, (C.I.O.S. Target No. 28/71). (Army Air Forces. Technical Intelligence Report No. 1-42). Off. Pub. Bd., Report, PB 9780. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The only results obtained in these tests were the determination of figures for thrust coefficient and minimum fuel consumption of the ram-jets. A second type of ram-jet is briefly described and was considered as power for aircraft propellors.

SANDES, E. Interrogation of Messerschmitt personnel in Regensburg area. (AAF Technical Intelligence Report No. I-9). Off. Pub. Bd., Report, PB 9772. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report gives the information secured from the finding of a safe and the interrogation of four employees at the Messerschmitt plant. Production plans and drawings of the ME 109 and ME 262 were found. Interrogation provided information relative to new features incorporated in the ME 262, which they say was to replace all other fighter types in German production. Novel methods of aircraft manufacturing are mentioned.

SIDAM, HARRY W. Universal joint - JU-88 airplane. (Army Air Forces. Experimental Engineering Section, EXP-M-51/AD873, Aid.I). Off. Pub. Bd., Report, PB 7730. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report contains the chemical analysis of the carbon, nickel and chromium contents of the component parts of subject joint. Remaining metals are as indicated by spectrograph.

SIEGEL, MELVIN. Comments on aerodynamic design of JU-88 airplane. (Army Air Forces. Experimental Engineering Section. EXP-M-51/Aer173). Off. Pub. Bd., Report, PB 7463. 1941. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
General aerodynamic inspection of the JU-88 airplane showed in the range of control surface motions, a ratio of elevator area to total horizontal area of 40%. In aerodynamic balance the flaps, ailerons and elevator each rate 30%, while the single rudder tab is larger than on comparable American planes Performance claimed is 300 m.p.h. at 15,000 feet with 2 Jumo 211 engines each rated at 1080 b.h.p. at 12,000 feet. It is recommended that further study be made of automatic dive pull-out mechanism, dive brake and flap seal devices.

SIEBU, MARVIN A. Study of the hydraulic system and wheel and brake assemblies of Junkers JU-88 airplane. (Army Air Forces. Experimental Engineering Section, EXP-M-51/AD880) Off. Pub. Bd., Report, PB 7462. 1941. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a report on the quality of German Manufacture as exhibited in hydraulic system and wheel and brake assemblies of the Junkers JU-88 airplane. The hydraulic system shows a great deal of similarity to that used on U.S. airplanes. However, it is inherently more complicated due to extra units in the fitting connections, and the use of lock-wiring on all nut connections. No trouble, without these safety devices, has been experienced with U.S. equipment. This JU-88 also had "quick disconnect" fittings on all firewall connections and in wings and fuselage, which insures a time-saving when executing engine or complete wing changes. The master brake cylinder of this plane is extremely efficient though complicated. The "ring spring" type of shock absorber will require little maintenance and be less susceptible to gun fire damage. However, it is heavier and has poor rebound characteristics. Appended diagrams illustrate master cylinder, section of main wheel casting, undercarriage leg, and tail wheel unit of subject plane.

VON KARMAN, THEODORE and MCDONALD, GEORGE C. Interrogation of Dr. Blenk, Director of Luftfahrtforschungsanstalt Hermann Goering, Braunschweig. (Army Air Forces. Technical Intelligence Report I-17). Off. Pub. Bd., Report, PB 7800. 1945. 5 p. Price: Microfilm - 50¢ - Photostat - $1.00
Interview with the Director of the LFA in May 1945, covering the organization and research work of this German institute for aeronautical research. In the early days of the institute considerable research of a fundamental character was conducted but it later was used almost entirely for tests for industry.

VON KARMAN, THEODORE and MCDONALD, GEORGE C. Interview with Dr. A. Busemann at Volkenrode on 9 May 1945 and at Trauen Flugzeugprüfstelle on 13 May 1945. (Army Technical Intelligence Report I-15). Off. Pub. Bd., Report, PB 7798. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Dr. Busemann was in charge of the Institute of gas dynamics (supersonic flow) at Volkenrode. He described the arrangement of the A9 wind tunnels at Volkenrode, and various experiments on rocket and jet propulsion.

VON KARMAN, THEODORE and MCDONALD, GEORGE C. Interview with Dr. Braun of LFA Braunschweig on 10 May 1945. (Army Air Forces. Technical Intelligence Report I-16). Off. Pub. Bd., Report, PB 7799. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Dr. Gerhart Braun was chief of the section dealing with mechanics of flight at LFA. His main interest was the testing of free flight models to secure aerodynamic data in the transsonic range. He described briefly various missiles developed under his direction to obtain aerodynamic data. One was a finned rocket-driven projectile 55 cm in diameter and 460 cm long, called "Feuerlilie". The trajectory was determined by optical tracking with cine-theodolites. The missile HS 298 was an air-to-air missile with radio control, fitted with parachutes for purposes of recovery.

VON KARMAN, THEODORE and MCDONALD, GEORGE C. Interview with Horton Brothers, Dr. Lambricht and Dr. Madelung in London on May 21, 1945. (Army Air Forces. Technical Intelligence Report I-11). Off. Pub. Bd., Report, PB 9774. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This interview revolves around tailless planes and gliders in which the Horton brothers were particularly interested. Those interrogated were German prisoners held in England. The Forschungsanstalt Graf Zeppelin worked on catapults for assisted take-off and braking of aircraft by means of parachutes.

VON KARMAN, THEODORE and MCDONALD, GEORGE C. Interviews in London on 21 May 1945 with Dr. Kurt Tank, Otto Pabst and Hans Multhopp of the Focke-Wulf Company. (Army Air Forces. Technical Intelligence Report I-10). Off. Pub. Bd., Report, PB 9773. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
The reported interview deals mostly with the German aircraft manufacture and details concerning the Focke-Wulf company work during the war. The last job of Pabst was on the ram jet motor.

Japanese

LOWREY, F. T. Report on castings, forgings and extrusions used in the construction of two Japanese aircraft, the Aichi 99 dive bomber and the Mitsubishi 00 fighter. (Army Air Forces. Experimental Engineering Section, EXP-M-51/AG138-3). Off. Pub. Bd., Report, PB 7464. 1942. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
The Aichi 99 dive bomber employs approximately the same number of castings as are used in the Northrup A-17 type, which is a comparable airplane. The Mitsubishi 00 fighter employs castings for control surface attachment fittings and wing panel attachments, whereas comparable United States planes such as the P-36 and P-43 use forgings in corresponding places. No extruded sections were found in the Aichi 99 and only 2 on the Mitsubishi 00 whereasthe U. S. practice makes frequent use of extrusions for wing-spar cap strips, skin stiffeners, wing panel attachment match angles, fuselage longerons and stringers, and control surface attachment fittings. No metallurgical analysis was carried out to determine the composition of the parts. Appended is a test of the parts of each plane - castings, forgings and extrusions.

OBERG, T. T. and POWERS, J. E. Fatigue properties of aluminum alloy from Japanese airplane. October 27, 1942. (Army Air Forces. Experimental Engineering Section, EXP-M-56-4122 Add III). Off. Pub. Bd., Report, PB 7469. 1942. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Test to determine the fatigue strength in reversed bending of an aluminum alloy extruded front spar in the wing structure of a Japanese Nakajima 97 MX-3 torpedo bomber. The fatigue-limit for this aluminum zinc alloy was equal to that of 24 S-T aluminum alloy and 15.8% lower than that of forged X76S (M68) aluminum alloy; the notch sensitivity was comparable to 24 S-T alloy and slightly lower than X76S (M68) alloy. It is very probable that the flange was heat treated and cold stretched to raise the tensile properties. Tables giving a comparison of the mechanical properties of the Japanese specimen and domestic forged and extruded high strength aluminum alloys, a comparison of the chemical composition of each and fatigue data in reversed bending of the Japanese material, are included in the report.

United States

ABZUG, MALCOLM J. Static longitudinal stability and turning stick forces. (Navy Department. Bureau of Aeronautics. Aviation Design Research Section. Report M-33). Off. Pub. Bd., Report, PB 8173. 1945. 16 p. Price: Microfilm-50¢ - Photostat-$2.00
Available flight test and wind-tunnel test data on the static longitudinal stability and turning stick forces of many service and experimental U.S. Naval aircraft are presented in this report. The critical dependence of airplane longitudinal stability and elevator stick forces on C.G. positions indicated a need for a collection of available data on these quantities. Twelve pages of test data on longitudinal stability and turning stick forces with left coefficient for different planes are given in the appendix.

ALDRICH, S. J. Direct current motors, mfg. by Lear Avia. Co. for use on AT-15 airplanes. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-484M). Off. Pub. Bd., Report, PB 10174. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests conducted by the Air Corps on two motors indicated that they were unsatisfactory for use in operation on aircraft bomb bay doors in one case, and to drive the landing gear retracting mechanism in the case of the other. Graphs.

BAILEY, G. W. Conversion of the Curtiss A-25A airplane for cargo-carrying purposes. (Army Air Forces. Engineering Division. ENG-51-4275-9). Off. Pub. Bd., Report, PB 9747. 1943. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
The removal of armament and equipment not necessary for transport flying allowed only 900 pounds of cargo weight as a maximum. The conclusion drawn from the tables of the report is that the airplane would not make an efficient transport. A drawing of the transport version is included.

BAILEY, G. W. Installation of type B-13 turbo supercharger and Allison V-1710-89 engine in stripped P-40E and K airplanes. (Army Air Forces. Experimental Engineering Section, EXP-M-51/AG136, Addendum 13). Off. Pub. Bd., Report, PB 7268. 1942. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Comparative study of liquid and air inter-coolers on the stripped P-40E airplane with an Allison V-1710-89 engine and type B-13 turbo supercharger installed. The calculated performance of each installation shows the air intercooler to produce a slightly higher speed, rate of climb, and absolute ceiling, and a slightly lower time to climb, take-off distance and landing speed. Installation of either would necessitate lengthening the engine mount with the attendant forward movement of the center of gravity. A future investigation of spin characteristics with this mounting might be undertaken. Appendix 2 contains inboard profile drawings of the installation with both inter-cooler systems studied.

BAILEY, GEORGE W. Range extension investigation of Northrop P-61C airplane. (Army Air Forces. Engineering Division. TSEAL2-4308-5-13). Off. Pub. Bd., Report, PB 9758. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Increased range is possible by removing the turret and installing gas tanks directly forward and immediately aft of the wing front spar, thus increasing the internal fuel load by 480 gallons. Gross weight is increased considerably but is limited only by the landing gear factor and center of gravity shift. A combat range diagram is included.

BARKER, JOHN W. Effect of high intensity detonation on engine life. (Army Air Forces. Engineering Division. TSEPL-5-518-336). Off. Pub. Bd., Report, PB 8131. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were conducted on Dynamometer No.5 to determine the intensity of detonation which can be sustained by the R-1820-87 engine without failure. Controlled detonation at levels of intensity as high as 180 flashes per minute do not render the R-1820-87 engine immediately inoperable, but long periods of operation at the higher level impair the engine for service. Similar tests should be run on other currently used engines to determine the level of detonation which can be sustained without failure.

BARTFIELD, J. E. Investigation of the accident of the North American AT-6C airplane (Serial No. AC42-4119) near Malvern, Alabama. (Army Air Forces. Engineering Division. ENG-51-TR344-23). Off. Pub. Bd., Report, PB 10111. 1943. 14 p. Price: Microfilm-50¢ - Photostat-$1.00
It was concluded that failure of center section was probably due to a violent maneuver in excess of maximum speed and that failure of empennage was probably caused by impact with left wing panel. No structural changes were recommended. Ten photographs.

BERRY, J. R. Destroyer modification of the Douglas A-26. (Army Air Forces. Experimental Engineering Section. EXP-M-51-4276-1). Off. Pub. Bd., Report, PB 9748. 1942. 16 p. Price: Microfilm-50¢ - Photostat-$2.00
The necessary changes to make the A-26 a destroyer type airplane are of secondary importance and conversion would be satisfactory according to this report. Performance as such is evaluated and weight changes are tabulated as they affect armament, equipment, crew, fuel, etc. Two drawings illustrate the general arrangement and inboard profile of the modified airplane.

BERRY, J. R. JR. Modification of P-38J airplane for photographic missions. (Army Air Forces. Engineering Division. ENG-51-4308-5-1). Off. Pub. Bd., Report, PB 9757. 1943. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
The modification added no weight to the airplane and was accomplished by removing all guns, ammunition, and nose structure, and replacing them with new structure to provide for an observer, 600 rounds of ammunition, two .50 caliber guns and a K-17 camera for the observer. Two drawings are included showing general arrangement and inboard profile of the modifications.

BERRY, J. R. XA-41 carburetor duct flow tests. (Army Air Forces. Engineering Division. ENG-51-4272-7-16). Off. Pub. Bd., Report, PB 9746. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The tests are not described here but a reference is cited to them. Conclusions arrived at indicate that for this airplane duct losses can be reduced, pressure loss is caused by construction errors, and velocity distributions are good. Recommendations are made for correction of faults encountered.

BOLTON, H. H. and HALE, E. J. Overspeed test of a Hamilton Standard type propeller, model 2B20, with aluminum alloy blades of design A6241A, having composition (or molded) rubber fairings attached for use on the O-40 airplane. (Army Air Forces. Technical Report 4602). Off. Pub. Bd., Report, PB 7022. 1941. 10 p. Price: Microfilm - 50¢ - Photostat - $1.00
The propeller was run at a speed of 2904 r.p.m. for one hour and inspected. Speed was then increased to 3050 r.p.m., run for one hour, and inspected. The propeller cuffs, or fairings, failed to pass this test because of cracks around the balance plug. In the molded composition rubber shank fairing is a weight consisting of a brass plug held in place by a brass strap fitting tightly around the steel shank of the propeller, and completely enclosed in the rubber fairing except for a removable cover plate for inspection and maintenance. At test speeds of 132% and 143% overspeed, the cuffs failed by ripping loose on the heading edge. This wax probably due to centrifugal force exerted by the balancing plug, so it was recommended that some means of obtaining vertical balance, other than locating weights in the cuff, be used.

BRADSHAW, C. F. Test of Stromberg carburetor vapor elimination system. (Army Air Forces. Engineering Division. TSELA-3B-519.174). Off. Pub. Bd., Report, PB 6878. 1944. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of Power Plant Laboratory tests to determine what improvements can be made to correct present vapor elimination system failures in Stromberg carburetors. Three vapor eliminator floats and two types of vapor eliminator needles were used in these tests, the first part no. 393512 incorporating a synthetic rubber tip and the second was a solid stainless steel needle part P-70054. The rolled seal type vapor eliminator float is more practical, in that there is less chance for a leak to occur at the joint between the two float sections. The synthetic rubber tip is subject to extreme wear, which may be increased by the use of certain fuels. The stainless steel needles is more durable and not affected by fuel, but is more critical to proper seating. Appendix contains a description and a discussion of methods of testing and results. Photographs of the rolled seal floats are included.

BRODERICK, S. J. Ford Company centrifugal cast steel cylinder barrels. (Army Air Corps. Experimental Engineering Section. EXP-M-56-4037). Off. Pub. Bd., Report, PB 9796. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
A report on inspection procedures for finding defects due to porosity in the manufacture of steel cylinder barrels for the Pratt and Whitney R-2800 engine.

BRODERICK, S. J. Magnesium alloy detachable rim from Goodyear wheel. (Army Air Forces. Experimental Engineering Section. EXP-M-51/AD914). Off. Pub. Bd., Report, PB 6470. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of an examination of a part of a broken detachable rim from a Goodyear wheel obtained from Bell P-39D airplane, A.C. no. 40-3026, to determine if all of the break, showing a varied coloration, occurred at the same time. Results of examination showed the unlikelihood of an earlier break. The bad micro-shrinkage porosity in the thicker part of the rim undoubtedly was a contributory cause of the failure. Examination of the fracture indicates that failure was due to overstress, not to fatigue. Appendix containing figures is not included in this report.

BROUSE, DON. Fabrication procedures used by the Ford Motor Co., Iron Mountain, Michigan, in the construction of CG-4A gliders. (Army Air Forces. Engineering Division. ENG-56-M4683). Off. Pub. Bd., Report, PB 10107. 1943. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
An investigation of the fabrication procedures which showed deficiencies in the operating technique. The gluing jigs that were used were designed on an incorrect basic principle and modifications were recommended to insure sufficient gluing pressure.

BUHLER, W. C. Shock sustained during opening of troop type parachutes. (Army Air Forces. Engineering Division, TSEAL-56-4-194). Off. Pub. Bd., Report, PB 11664. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Twenty drop tests were made at an altitude of 1,300 to 1,800 feet above sea level using the standard T-5 parachute, rope dummy, and Brinnell Dynamometer. The purpose was to determine the opening shock at various speeds and weights. A table and a graph are appended.

BURNS, L. G. Test of Type K-1 wind-driven fuel booster pump. (Army Air Forces. Engineering Division ENG-57-524-636). Off. Pub. Bd., Report, PB 7602. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
AAF tests on wind-driven fuel booster pump for aircraft submitted by Romec Pump Company. Laboratory and flight tests were satisfactorily completed.

BURSTEIN, FRANK I. Bag, parachute carrying. (Army Air Forces. Engineering Division. TSEAL-5F3-672-10-381). Off. Pub. Bd., Report, PB 11686. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this report is to provide information relative to the standardization of a parachute carrying bag to be used for returning aerial delivery parachutes from the point of use to the supply base.

BUTT, CHARLES B. MCD 393A, A study of alternate arrangement in MCD 393. (Army Air Forces. Engineering Division. TSELA-2B-4261-8-3). Off. Pub. Bd., Report, PB 9723. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report presents the result of study and wind-tunnel tests regarding possible advantages of installing heavier turrets in MCD 393 and MCD 393A, made on 1/35th scale model. Conclusions lead to recommendation to install aerodynamically clean means of protecting aircraft from flak. Data sheets and weight statement and general arrangement drawing for proposed medium bomber, MCD 393A, and performance curves and comparative data for calculated and wind tunnel performance for MCD 393 and MCD 393A are appended.

BUTT, C. S. A study of eight and fifteen-place towed troop-carrying gliders. (Army Air Forces. Experimental Engineering Section. EXP-M-51/AD833, Add. 5). Off. Pub. Bd., Report, PB 9726. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Correction of error in Memorandum Report EXP-M-51/AD833, addendum 3, dated November 25, 1942, "Indicated air speed (I.A.S.)" should be changed to, "true air speed (T.A.S.)", in all places used with the exception of paragraph B.3 and Appendix 1, Graph I.

BUTT, C. S. Study of eight-and fifteen-place towed troop carrying gliders. (Army Air Forces. Experimental Engineering Section. EXP-M-51/AD833, Add. 6). Off. Pub. Bd., Report, PB 9727. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
To correct minor error in Memorandum Report EXP-M-51/AD833, Addendum 4, and to define "radius of action". The term "indicated air speed (I.A.S.)" should be changed to "true air speed (T.A.S.)" in all places used. Maximum radius of action is defined as the distance from take-off to the point of glider release.

BUTT, C. S. Study to convert the Douglas A-26 airplane into a light bombardment airplane fulfilling newest military requirements. (Army Air Forces. Engineering Division. ENG-M-51-4412-1-3). Off. Pub. Bd., Report, PB 9761. 1943. 16 p. Price: Microfilm-50¢ - Photostat-$2.00

A discussion of the revisions necessary to fulfill the new military requirements and an estimated comparison of performance of revised A-26 with these requirements is presented. Also a comparison in weight and balance of the original with the revised A-26 is given. A drawing illustrates the general revisions in the airplane. Structural modifications were found necessary in the nacelle.

BUTT, C. S. Summary report of studies on twin-engined medium bombers. (Army Air Forces. Engineering Division. ENG-51-4261-8-2). Off. Pub. Bd., Report, PB 9739. 1944. 31 p. Price: Microfilm-50¢ - Photostat-$3.00
A summary of the results of the preliminary design studies, wind-tunnel tests, and full-size fuselage mock-up inspection of MCD-372, MCD-372A, MCD-377 and MCD-393 airplanes. Changes and suggestions for this type bomber came from AAF combat crews as well as from the results of laboratory tests and design. Appendix 2 includes data sheets, performance curves, weight statement and general arrangement drawings of the MCD-393. Attached are drawings of the general arrangement of proposed medium bomber, fuselage inboard profile, MCD-372A and inboard profile, nacelle.

CADWELL, JAMES J. Effect of rate of loading on mechanical properties of aircraft materials. (Army Air Forces. Engineering Division. TSEAL-4-M5163). Off. Pub. Bd., Report, PB 9821. 1945. 8 p. Price: Microfilm-50¢-Photostat-$1.00
Conferences were held at California Institute of Technology and at various aircraft manufacturers to discuss the effect of rapid loading on aircraft materials. Very little information is available on the subject and recommendation was made for the construction of two hydro-pneumatic machines for test purposes.

CARPENTER, H. L. Prony brake starter test stand. (Army Air Forces. Experimental Engineering Section, EXP-M-54-656-487). Off. Pub. Bd., Report, PB 10262. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of a conference with engineers at Jack-Heintz, Inc., Cleveland, Ohio, regarding design of a prony brake starter test stand. The design of a prony brake made by the materiel center was discussed with the view of incorporating the portable features of the Jack-Heintz unit with the added advantage of being able to measure the load torque and breakaway torque of the starter, also be able to test both right and left hand starter rotation and starter of all sizes. The Jack-Heintz, Inc. will make a layout of the prony brake using an eddy current principle for measuring the brake torque.

CARPENTER, H. L. Rubber coil starter. (Army Air Forces. Experimental Engineering Section, EXP-M-54-656-520). Off. Pub. Bd., Report, PB 10227. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This starter was designed to utilize the energy stored in rubber discs when distorted. One side of the rubber disc was securely fastened to the starter jaw, while the other side was screwed to a moving member of the starter. The discs are twisted approximately 120°, then the starter jaw is meshed with the engine jaw and released, the distorted rubber giving the engine a quick snap over to accomplish starting. It was concluded that this type of starter is not suitable for use on Army Air Forces aircraft.

COLLIER, R. E. Deception equipment for use with Vega B-40 and Consolidated B-41 airplanes. (Army Air Forces. Engineering Division. ENG-M-51-4412-1-2). Off. Pub. Bd., Report, PB 9760. 1943. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
This report recommends the installation of dummy armament on the B-17 and B-24 so as to have them appear to be B-40 and B-41 airplanes. Two drawings illustrate the general arrangement of the dummy turret installations. Estimated changes in performance characteristics are tabulated.

CONNER, ROBERT F. Studies of propeller anti-icing in the U.K. (Army Air Forces. Engineering Division. ENG-52-561-136-7). Off. Pub. Bd., Report, PB 10120. 1944. 28 p. Price: Microfilm-50¢ - Photostat-$2.00
This report gives the results of the use of Ault and Wiborg 314 propeller anti-icing compound on propellers of aircraft flying the North Atlantic Ferry Routes, and investigates the research programs of experimental agencies outside the United States. A detailed account of its use by operational units and their impressions as to its effectiveness as compared to other similar pastes is presented. Its use by ATC and various contract carriers, and their reactions to it is covered. Flight crew reports of engine vibration and pilot reaction to its use is discussed. An analysis of actual cases of icing occurring, during the months October, 1943, to January, 1944, to aircraft operating through Prestwick, Scotland, is included.

CONSTANT, L. A. Destruction tests of Heinz plywood components for the North American AT-6C airplane. (Army Air Forces. Engineering Division, ENG-51TR344-10, Add. 6). Off. Pub. Bd., Report, PB 10213. 1943. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Destruction tests for the plywood fuselage section and stabilizers were made in the horizontal tail pull-up condition and in the tail wheel side load condition. It was concluded that both components meet 100% of the ultimate requirements for the horizontal condition, and it was recommended that rigid inspection be maintained for bolt fittings in the stabilizer rear spare reinforcing plates. Three photographs illustrate the tests.

CONSTANT, LEONARD A. Destruction tests of the Berkey and Gay AT-6C plywood parts. (Army Air Forces. Experimental Engineering Section, EXP-M-51TR344-10, Add. 2). Off. Pub. Bd., Report, PB 10209. 1942. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests of the stabilizer proved satisfactory and, after repairs on the fuselage were made, it also met ultimate load standards. Four photographs are included.

CONSTANT, LEONARD A. Static tests of the Berkey and Gay AT-6C plywood fuselage. (Army Air Forces. Experimental Engineering Section, EXP-M-51TR344-10, Add. 1). Off. Pub. Bd., Report, PB 10208. 1942. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were made under various conditions, changes were made where results were sub-standard, and recommendations for modifications were noted for the manufacturer to follow in future construction. Nine photographs illustrate the tests.

CONSTANT, LEONARD A. Static tests of the Berkey and Gay stabilizer for the North American AT-6C airplane. (Army Air Forces. Experimental Engineering Section, EXP-M-51TR344-10). Off. Pub. Bd., Report, PB 10207. 1942. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Reports the results of static tests conducted on this type of stabilizer and gives a brief description of its structure. Upon failure to pass the test, it was repaired to remedy defects and recommended for approval after the corrected defects met 100 percent of the ultimate load requirements. Four photographs are included.

CORSAW, L. H. Investigation of Hydromatic propeller feathering with gasoline and nitrogen. (Army Air Forces. Engineering Division. TSELA-3C-590-90-8). Off. Pub. Bd., Report, PB 6160. 1944. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
A series of tests, using gasoline in the feathering system, were run on an R-2800-21 engine equipped with a Hamilton Standard Hydromatic 23E50-6353A-18 propeller and Hamilton Standard governors, No. 408-615D and 368-A15D. PESCO feathering pumps Nos. R-280-BH, 280-364EX and 306-A were used during the tests. The R-280-BH pump is the standard feathering pump of 3½ gals./minute capacity. The 280-364EX pump is a special pressure loaded pump of 4 gals./ minute capacity. The 306-A pump is comparable to the standard feathering pump except that it has 7 gals./minute capacity and is driven by a 3 hp., 220 volt, 3 phase A.C. motor instead of the 24 volt D.C. motor normally used with feathering pumps designed for airplane installation. Initial attempts with gasoline in the standard feathering pump were unsuccessful partly because this pump was not designed to handle a light fluid such as gasoline. With the second pump 280-364EX, feathering was accomplished quickly but unfeathering has not accomplished which may have been due to blade torque caused by the swelling of the blade packings from the gasoline, etc. With the 306a pump the propeller

feathered normally in about 10 seconds and unfeathered successfully in about 12 seconds. It was concluded that a pressure loaded pump capable of delivering gasoline at a rate of at least 7 gals./minute is needed. Blade packing must be made of a material resistant to gasoline. Use of high pressure gas for feathering is impractical for a bottle of the required capacity would have a prohibitive weight, and the leakage inherent in the feathering system is an obstacle to a practical use of gas for feathering.

COULSTON, R. M. Installation of Crocker-Wheeler training turret in AT-11 airplane. (Army Air Forces. Experimental Engineering Section. EXP-M-51/M864). Off. Pub. Bd., Report, PB 6396. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Describes experimental installation of the Crocker-Wheeler training type upper turret in Beech AT-11 airplane A.C. No. 41-9515, designed for a factory-installed turret, supported at the driving ring. The Crocker-Wheeler turret is supported on a base plate which necessitated the re-working of the airplane and installing suitable supporting structure. This was done in accordance with standards of safety and strength for this type of plane.

DAGBERG, CARL F. Reflection from the windshields of four-engined aircraft. (Army Air Forces. Engineering Division. ENG-51-4263-32). Off. Pub. Bd., Report, PB 9745. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The reflection from instrument panel lights during night flying creates a hazard to vision and can be remedied by the installation of properly designed shields. This was experienced in actual flight by the author of the report.

D'AZZO, J. J. Explosion- proofness test of fluid metering pump motors manufactured by the Weldon Tool Company. (Army Air Forces. Engineering Division. ENG-54-656-484AR). Off. Pub. Bd., Report, PB 10273. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
The results of tests on two motors performed at the National Bureau of Standards and the Materiel Command. Both were subjected to explosion chamber tests in the presence of gasoline and isopropyl alcohol vapor.

D'AZZO, J. J. Oil cooler actuators built by Lear Aviation for P-63 airplanes. (Army Air Forces. Engineering Division. ENG-54-656-484AZ). Off. Pub. Bd., Report, PB 10276. 1944. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Failure of the actuator in certain respects necessitated changes in its manufacture. The failures and changes are discussed here, and until the new type is available, instructions in the use of the faulty one are recommended.

D'AZZO, J. J. Retraction motors used on B-29 airplanes. (Army Air Forces. Engineering Division. ENG-54-656-484AT). Off. Pub. Bd., Report, PB 10275. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The failures of retracting motors were found to be due to two main causes: (1) brushes wearing out, (2) incorrect setting of limit switches. Other failures seemed to be caused by these two main faults. Tests to rectify the situation were initiated. These motors are used for landing gear, flaps, bomb bay doors, and wheel doors and were made by Eclipse Aviation.

D'AZZO, J. J. Thermal protection of a motor manufactured by Lear Aviation, Inc. (Army Air Forces. Engineering Division. ENG-54-656-484AB). Off. Pub. Bd., Report, PB 10272. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A report of tests on the motor to determine the failing temperature. With the thermal protector on, it functioned satisfactorily for design specifications. It was also found that higher temperatures could be used if desirable.

D'AZZO, J. J. Thermal protection of Eclipse landing gear motors used on B-29 airplanes. (Army Air Forces. Engineering Division. ENG-54-656-484BC). Off. Pub. Bd., Report, PB 10274. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
These tests proved that overload and locked output shaft heat protection is provided but locked armature protection is insufficient. Further tests are recommended.

DIETZ, ROBERT P. Lockheed Report No. 4279, stress measurements during rate-of-roll test on P-38F airplane equipped with aileron boost controls. (Army Air Forces. Engineering Division. ENG-51-P790-4, Add. 6). Off. Pub. Bd., Report, PB 10177. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Comments on the manufacturer's report with special attention given to the inadequacy of certain phases of it. The report itself is not included.

DIRCKSEN, A.D. Lamp assemblies, flexible cockpit, incandescent and ultra-violet. (Army Air Forces. Engineering Division. ENG-54-656-795). Off. Pub. Bd., Report, PB 9835. 1943. 2 p. Price: Microfilm-50¢ - Photostat - $1.00
A report describing the development of new type cockpit lights for aircraft.

DOWNEY, F. B., JR. Aircraft engine cylinder washing machines. (Army Air Forces. Air Technical Service Command. Engineering Division. TSEPE 657-97). Off. Pub. Bd., Report, PB 6879. 1946. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
This report covers the inspection and test on Jan. 3, 1946, of the first of two aircraft cylinder wash-machines procured from Hanson-Van Winkle-Munning Company. The purpose of the machine is to remove lapping compound, honing debris, and chromium particles from radial aircraft engine cylinder bores. The machine was made according to specifications which are appended to the report. Tests showed the machine did not clean the inside of the cylinder lead satisfactorily. Several suggestions were made which might correct this discrepancy and the contractor is to endeavor to make changes to improve the machine.

DRIGGS, IVAN H., BARCLAY, F. D. and BAKER, DONALD L. The application of gas turbines to fighter aircraft. (Navy Department. Bureau of Aeronautics. Aviation Design Research Section. Report R-36). Off. Pub. Bd., Report, PB 8157. 1944. 18 p. Price: Microfilm-50¢ - Photostat-$2.00
This study investigates and discusses in a preliminary manner: The type of fighter airplane best suited to the application of gas turbine; the best methods of applications to such airplanes; performance that can be anticipated from these airplanes; the design trends in gas turbines that are most likely to produce advances in fighter aircraft performance. Two general types of fighter planes are analyzed: XFL-1 and the F7F-2. The present reciprocating engines were replaced first with gas turbines operating alone and second by a combination of these units with pure jets. Gas turbines can replace reciprocating engines in both single and twin engine fighter aircraft with no loss in take off distance or operating radius, but with a very interesting increase in speed, climb and ceiling. Gas turbine jet combinations proved undesirable.

DRIGGS, IVAN H. Estimation of performance of rocket propelled aircraft. (Navy Department. Bureau of Aeronautics. Aviation Design Research Section. Report R-44). Off. Pub. Bd., Report, PB 8161. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
This report makes available a performance method for estimating maximum speed, rate of climb at any altitude, maximum range and endurance of rocket propelled missiles and airplanes. In working out the method described, with curves developed therefrom, the usual assumption that the airplane drag curve is a parabola is made. This is rewritten in a convenient form and then generalized. From this generalization, processes of differentiation and minimization give equations and curves for maximum rate of climb, speed for maximum climb, maximum endurance, the speed for maximum endurance, the maximum range and the speed for maximum range. A chart is also drawn by which it is possible to estimate the maximum speed that would be obtained in an incompressible fluid. A chart is supplied by which the speed in an incompressible fluid is corrected for the effects of compressibility.

ELIAS, BURTON A. Drop tests conducted on Beech AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51-TR321-27, Add. 4). Off. Pub. Bd., Report, PB 10184. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
A 30 inch drop with a 6000 pound gross weight exceeded the required accelerations very satisfactorily.

ELIAS, BURTON A. Static destruction tests conducted on the fuselage of the Beech-AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 1). Off. Pub. Bd., Report, PB 10181. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
When tested in the minimum weight positive low angle of attack condition, the fuselage proved satisfactory for 230% of the ultimate load required.

ELIAS, BURTON A. Static destruction tests conducted on the horizontal tail surfaces of the Beech AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51-TR321-27). Off. Pub. Bd., Report, PB 10180. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Results show the fuselage is satisfactory for 125 percent of the ultimate pull-up load and the horizontal tail surfaces and control system for 215 percent of the ultimate pull-up load.

ELIAS, BURTON A. Static destruction tests on the aileron tab and flaps of the Beech AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 5). Off. Pub. Bd., Report, PB 10185. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
The tab test proved satisfactory for 320% of the ultimate load required and the flap for 135%.

ELIAS, BURTON A. Static tests conducted on the alighting gear of the Beech AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 3). Off. Pub. Bd., Report, PB 10183. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The results of this test are reported satisfactory and no further structural changes were deemed necessary.

ELIAS, BURTON A. Static tests conducted on the engine mounts of the Beech AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 10). Off. Pub. Bd., Report, PB 10190. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
The engine mounts were found to be satisfactory for 100% of the ultimate side load and for 175% of the ultimate vertical and torque loads.

ELIAS, BURTON A. Static tests conducted on the flaps of the Beech AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 7). Off. Pub. Bd., Report, PB 10187. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
The flaps supported 100% of the ultimate load of 1282 pounds without failure.

ELIAS, BURTON A. Static tests conducted on the tail wheel and fuselage of the Beech AT-10 airplane. (Army Air Forces. Engineering Division. ENG-M-51-TR321-27, Add. 11). Off. Pub. Bd., Report, PB 10191. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
The tests proved that the tail wheel and fuselage satisfactorily supported 100 percent of the ultimate side tail wheel load of 1304 pounds.

ELIAS, BURTON A. Static test conducted on the wings of the Beech AT-10 airplane for the negative low angle of attack condition. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 9). Off. Pub. Bd., Report, PB 10189. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
The test proved satisfactory for 100% of the negative low-angle of attack condition.

ELLIS, J. A. Installation of naval torpedo Mark XIII in Douglas A-24 and Curtiss A-25 type airplanes. (EXP-M-51-/AC 127, Add. 1.). Off. Pub. Bd., Report, PB 7269. 1942. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
A study to determine the feasibility of carrying naval torpedo Mark XIII externally on the Douglas A-24 and Curtiss A-25 airplanes. A chart shows weight, balance, and performance of the airplanes when carrying torpedoes, and drawings show general arrangement of the installations. Operation of the A-24 with the present type of Navy tail wheel installation would be extremely hazardous.

ELY, LAWRENCE D. Hinge bracket castings - Beech AT-10 airplanes. (Army Air Forces. Experimental Engineering Section. EXP-M-51-TR321-5). Off. Pub. Bd., Report, PB 10178. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
A discussion of limit load and ultimate load to be carried by hinge brackets of elevator, aileron, and flaps of the AT-10. Included are tables showing the results of load-deformation tests.

EVANS, C. R. and SHAW, R. W. Special ten-hour oil consumption test on Lycoming R-680-13 engine with chrome plated cylinders. (Army Air Forces. Engineering Division, Eng-57-503-1192). Off. Pub. Bd., Report, PB 7426. 1944. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
With chrome plated cylinders, the test on oil consumption during the 10 hour normal run was 2.5 pounds per hour, while the average specific oil consumption was .0089 with standard cylinders; the oil consumption obtained for the same time under similar conditions was 2.35 and the specific oil consumption was .0084. Considerable difficulty was experienced in plating these cylinders due to lack of experience on this type of cylinder and to poor anode construction. Because of this, the ring wear was excessive in this test, but a smoother finish on the cylinders should result in lower ring wear. It is recommended that only cylinders meeting AAF specification No. 20031, dated 7 February 1944, be used and that the cylinders be finish honed with P-600-E10 honing sticks. Includes graph and photographs.

FENDT, L. M. Thrust measuring equipment for jet propelled aircraft. (Army Air Forces. Engineering Division. TSEPL-655-1435). Off. Pub. Bd., Report, PB 10286. 1946. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A report on a conference held 19 December 1945 in the Instrument and Navigation Branch, Equipment Laboratory, to determine the necessary action and responsibility for the development of thrust measuring equipment for jet planes.

FRIEDRICH, E. J. Reflectors for marking taxi lanes. (Army Air Forces. Engineering Division. ENG-54-656-740). Off. Pub. Bd., Report, PB 9862. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The subject reflectors are so designed that they will recover their vertical position after being flattened by the wheel of a plane. They are illuminated by the landing lights of taxiing airplanes but are unsatisfactory for use as runway markers for approaching planes in flight.

FRIEDRICH, E. J. Torches, electric and oil burning, for temporary outlining of training fields. (Army Air Forces. Engineering Division. ENG-54-656-739). Off. Pub. Bd., Report, PB 9860. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A report rejecting both types for temporary boundary markers. The battery operated lights, Model No. 604, K-D Lamp Co., were found to be too short lived and not bright enough. The oil lanterns created a fire hazard, were easily extinguished by wind, and gave insufficient light.

FROMUTH, K. F. Weight reduction of B-24D airplane. (Army Air Forces. Engineering Division. ENG-51-4263-18, Add. 8). Off. Pub. Bd., Report, PB 9744. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
This memorandum report presents the results of a study to reduce the weight of the engine mount vibration isolation system on the B-24D by use of static tests of fittings as indicated by an attached drawing.

GELDER, G. B. Type D-12 propeller hub anti-icing generator. (Army Air Forces. Engineering Division. ENG-52-581-160-3). Off. Pub. Bd., Report, PB 10121. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests reporting the mechanical condition and electrical characteristics of this type generator. An AAF anti-icing test rig was used to measure field current and voltage, armature voltage and current, generator speed, field temperatures at various loads, and clearance between field and armature pole pieces. Curves and one photograph show the results.

GELDER, G. B., JR. Type D-12 propeller hub anti-icing generator. (Army Air Forces. Engineering Division. ENG-52-581-144-10). Off. Pub. Bd., Report, PB 10123. 1944. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
A series of tests to determine the mechanical strength durability, and electrical characteristics of this type generator. One was mounted on an electrical whirl rig and another on an R-1830-43 engine. Results of these tests are tabulated and conclusions drawn as to what modifications are necessary for the required performance. Curves and photographs illustrate the test results.

GORDON, ROBERT. Coolant flow measurement. (Army Air Forces. Engineering Division, ENG-M-57-523-196). Off. Pub. Bd., Report, PB 6209. 1942. 14 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this study was to provide a means for measuring coolant flows in the range of 8 to 40 G.P.M. Using a ½ venturi tube, the discharge coefficient and the flow were computed for water, kerosene, ethylene-glycol, diethylene-glycol, 100% iso-propyl alcohol and 50% iso-propyl alcohol. Results are given in twelve graphs.

GORDON, R. H. Flow test of PT-13E10 carburetor from P-63 airplane. (Army Air Forces. Engineering Division. ENG-57-519-167). Off. Pub. Bd., Report, PB 6874. 1944. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of investigation as to whether the cause of reported engine malfunction was the action of the carburetor. A standard flow bench check of the carburetor was made in the laboratory, with the conclusion that PT-13-E10 carburetor, Serial no. 368597, flows within the limits specified for Stock List no. 395505.2. Included in the report is a graph showing the results of the setting and travel check of the automatic mixture control, tabulated results of the flow bench test, and results of check made of jet sizes and power enrichment value.

GORDON, R. H. Test of Holley Carburetor model 1685-HB. (Army Air Forces. Engineering Division, ENG-57-519-103). Off. Pub. Bd., Report, PB 11696. 1943. 23 p. Price: Microfilm-50¢ - Photostat-$2.00
Service test on newly developed Holley carburetor, model 1685-HB. In the air box test for determining its metering characteristics, the full rich metering was satisfactory but the lean strength was excessively lean. Two altitude compensation runs were made to determine the effectiveness of the stabilizer valve. The load compensation in the high cruise range is better than in earlier models. The new model carburetor will meter warm fuel up to 140°F at sea level with an airflow of 10,800 lbs. hr. It is recommended that the manufacturer continue the test program to further improve the temperature compensation. A study should be made of the effect of varying fuel temperatures at altitude. The manufacturer should eliminate the enriching obtained at full throttle in auto lean, compared with part throttle mixture strength. Charts and curves are included.

GREEN, MARVIN C. Large hollow steel propeller blades. (Army Air Forces. Experimental Engineering Section. EXP-M-52-590-77-7). Off. Pub. Bd., Report, PB 6159. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Development designs for large hollow steel propeller blades at Curtiss Propeller plants in Caldwell, New Jersey, and Beaver, Pennsylvania, are discussed and analyzed to determine the structural characteristics of various designs. Type 1014 blade in 16' - 8" diameter, with and without longitudinal stiffeners, is approved over the three 1018 designs. The first 1018 design was abandoned because of a stress crack in the "fish mouth" rib end on the inboard end. The second design with welded ribs is hard to weld and to clean, and showed a shrinkage crack near the inboard end by using a Boroscope, though neither X-ray nor magnaflux detected the flaw. The third 1018 design has H strip copper-brazed to the ribs at the 36 inch station. A static load test, with "Stresscoat", will be given this design and vibratory stresses are being investigated. Future designs will have ribs starting at the 48-inch station.

GREENLEE, P. H. Screw terminals and flexible connector lug terminals on PAR-56 and PAR-64 landing lamps. (Army Air Forces. Engineering Division. ENG-54-656-760). Off. Pub. Bd., Report, PB 9825. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The results of vibration tests on the two types of terminals showed them to be satisfactory after a ten hour test. There was no apparent effect on the lamp bases.

GRIESINGER, J. W. Close-out of model 81-X glider pick-up unit. (Army Air Forces. Engineering Division. TSEPE-664-401E). Off. Pub. Bd., Report, PB 10293. 1946. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a memorandum report closing out further modifications of subject unit due to unsatisfactory flight tests and a cessation of hostilities in Europe.

GUERNSEY, EDWIN O. Alcohol, specification 14082, and "Solox", corrosion tests on spray nozzles, AN-4023-1, -2 and 4024-1, -2. (Army Air Forces. Engineering Division. ENG-M-57-446-1). Off. Pub. Bd., Report, PB 8146. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of corrosion tests on spray nozzles of high copper alloy, using Solox and isopropyl alcohol. Stoppage of these nozzles, used in the carburetor deicing system, was reported on the test stand. Several 100 ml. portions of Solox and several of isopropyl alcohol were evaporated in clean copper dishes over a steam bath, and sample nozzles were allowed to stand in isopropyl alcohol and Solox for a period of five days under room conditions. In neither case was there any evidence of corrosion. The failure of the nozzles to operate was probably not due to corrosion of matter present in the system. The composition of Solox is given in the report.

HARDING, W. T. Approach light installation at Geiger Field. (Army Air Forces. Engineering Division. ENG-M-54-656-638). Off. Pub. Bd., Report, PB 9838. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A progress report on the installation of incandescent and neon type approach lights. Comparative tests are to be made to determine which type is more useful. None were made at the writing of this report.

HAWK, GORDON M. High-speed aerial delivery parachutes, project PG-24. (Army Air Forces. Engineering Division. TSEAL56-8-350). Off. Pub. Bd., Report, PB 11682. 1945. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
The development of subject parachute to be used in conjunction with type A-12 container for dropping supplies from fighter aircraft is reported and considered completed.

HAZEN, HERBERT A. Horton 229 Bat Wing ship construction. (Army Air Forces. Technical Intelligence Report, I-4). Off. Pub. Bd., Report, PB 7791. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Investigation of twin jet propelled bat wing constructed airplane with tricycle landing gear, designed as a fighter with provision made for wing guns. The completed plane had had one successful flight, but had crash-landed on the second flight when the left engine burned up because of the excessive weight resulting from wood and steel used in construction as substitutes for unavailable aluminum, dural, etc. Due to this weight, no test flights were made. Five photographs of the plane are appended.

HERR, JAMES H. Aircraft electrical installation, George Kirilla, jr., N.I.C. suggestion No. 45685-244. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-525). Off. Pub. Bd., Report, PB 10226. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This memorandum report discusses a proposed method for fabrication of aircraft electrical systems and enumerates reasons on which decision not to adopt it were based.

HEUVER, H. M. and HAGE, ROBERT E. Analytical study of the performance of a cycloidal propeller and a preliminary survey of a fighter type design. (Army Air Forces. Engineering Division. ENG-51/P706-84). Off. Pub. Bd., Report, PB 9964. 1943. 74 p. Price: Microfilm-$1.00 - Photostat-$5.00
A preliminary study of cycloidal propulsion and its adaptation to fighter type aircraft. This particular design offers a two-rotor propeller mount with a total of twelve blades, six on each side of the fuselage. The advantages and disadvantages are cited and curves illustrate estimated performance at various pitch ratios. The vertical and hovering flight characteristics are calculated and charted as is the estimated performance as compared to the XP-77. Stability and control characteristics are explained, and drawings and sketches illustrate the mechanical aspects. Two photographs are included.

HOENER, R. F. Static test of wood trim tabs for North American AT-6C airplanes. (Army Air Forces. Experimental Engineering Section, EXP-M-51-TR344-6, Add.4). Off. Pub. Bd., Report, PB 10206. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Trim tabs for aileron, elevator, and rudder tested satisfactorily at 282, 205 and 175 percent of the ultimate load respectively.

HOENER, RICHARD F. Structural tests of the flaps and flap control system of the Lockheed P-38E airplane. (Army Air Forces. Experimental Engineering Section. EXP-M-51-P750-16, Add. 2). Off. Pub. Bd., Report, PB 10176. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests of landing flaps of the P-38E for maneuvering loads at a speed of 300 m.p.h. proved them unsatisfactory for such speeds. Operation of the flaps was recommended at 184 m.p.h. or less.

HOLLIDAY, T. B. Alternating current equipment for aircraft. (Army Air Forces. Engineering Division. ENG-54-656-669C). Off. Pub. Bd., Report, PB 9877. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
A conference with General Electric Company engineers investigated the possible wiring systems for aircraft and initiated action to analyze the various types. A motor protective device to prevent overload and thermal difficulties was described as were methods of synchronizing. No details are included.

HOLLIDAY, T. B. Alternating current equipment for aircraft. (Army Air Forces. Engineering Division. ENG-54-656-669E). Off. Pub. Bd., Report, PB 9879. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Discussions concerning the simplification of alternating current systems for aircraft, requirements for circuit breakers, internal combustion turbines, catapults, and transformer design were held with the Westinghouse Electric and Manufacturing Company representatives and are reported in this paper.

HOLLIDAY, T. B. Constant speed drive for alternators. (Army Air Forces. Engineering Division, ENG-M-54-656-539A). Off. Pub. Bd., Report, PB 10236. 1943. 3p. Price: Microfilm-50¢ - Photostat-$1.00
Report to coordinate design of mechanical drives for alternators, to be used in the XB-35 and XB-36 airplanes, as a coupling between the variable speed main engine and the alternator. A 3 speed overdrive is recommended as more satisfactory than a multispeed gear box or a 2 speed overdrive. Chrysler has designed a chain drive for the alternator to permit taking power from the propeller shaft. The gear ratio is 1.35:: 1.00, and since a ratio of 3:: 1 is needed a gear box will be required. An overdrive is a necessary substitute for a constant speed drive in this airplane. One graph is included.

HOLLIDAY, T. B. Flight control system for project XL-14. (Army Air Forces. Engineering Division, ENG-54-656-669 A1). Off. Pub. Bd., Report, PB 9888. 1944. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a memorandum report giving preliminary data for specifications covering an electrical flight control system for subject project. It describes the use of controls for the elevon (which acts as both elevator and aileron), rudder, and trim tabs. Consideration is given to accuracy of control, the control column, design of servo units, emergency release mechanism, weight, and reserve power.

HOLLIDAY, T. B. Requirements for alternating current system. (Army Air Forces. Engineering Division. ENG-M-54-656-478B). Off. Pub. Bd., Report, PB 10169. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This report tells of the development of an alternating current system for the XB-35 and XB-36 airplanes. A two speed gear box is necessary to cover the frequency range needed and recommendations for its manufacture are included.

HOLLIDAY, T. B. Test of explosion proof electric motors. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-467B). Off. Pub. Bd., Report, PB 10158. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Laboratory test on motor driven fuel booster pump No. 23 from Pump Engineering Service Corporation to determine its explosion proofness. Contrary to the usual experience with this type of motor pump unit, the commutation arcing appears to be sufficient to cause internal explosions of gasoline vapor within the motor. Flames from these internal explosions were not communicated to the external vapor surrounding the motor pump unit. Commutation characteristics should be improved by correction of the electrical design. Report of results of tests by National Bureau of Standards is appended.

HOOD, W. L. Conference on the repairability of hollow steel propeller blades. (Army Air Forces. Experimental Section EXP-M-52-590-65). Off. Pub. Bd., Report, PB 7994. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
It was concluded that a list of expendable parts of propellers to be replaced at each disassembly or overhaul should be included in the appropriate technical order, and allowable tolerances or dimensions of worn parts should be specified by the propeller manufacturer and incorporated in a technical order. The use of training films to assist in the thorough and rapid training of technical personnel is advisable. Repair of bullet holes in propeller blades should be studied and findings made available. Other subjects brought up were effect of rebrazing on heat treatment of blades and on the machine shank of blades, working of blades due to rebrazing and instructions to pilots in case of injury to the propeller hydraulic system.

HULMAN, J. Accessory gear drives. (Army Air Forces. Engineering Division, ENG-M-57-536-364). Off. Pub. Bd., Report, PB 7611. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report recommends that development work of accessory gear drives for aircraft be discontinued until after the war.

HULMAN, J. Conference on H-1 Air pump. (Army Air Forces. Engineering Division, ENG-M-57-536-366). Off. Pub. Bd., Report, PB 7610. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of conference held December 8, 1942 between personnel of manufacturing firms and AAF and Navy representatives on standardization of the H-1 air pump. (Later conference reported in PB 7609).

HILMAN, J. Conference on the H-1 air pump. (Army Air Forces. Engineering Division, ENG-M-57-536-372). Off. Pub. Bd., Report, PB 7609. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of a meeting held December 22, 1942, between representatives of industry and AAF and naval personnel on the H-1 air pump standardization program.

HILMAN, J. Conference with Alighting Gear Unit representatives. (Army Air Forces. Experimental Engineering Section. EXP-M-57-536-319). Off. Pub. Bd., Report, PB 8117. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Confirmation of a conference held on April 18, 1942, between representatives of the Alighting Gear Unit and the Power Plant Laboratory, on hydraulic pumps. It was decided that one small flange type of pump, Type B-6, should be retained for use on small engines or small aircraft where only a small amount of hydraulic power would be required, and that as much effort as possible be put in developing the 1500 p.s.i. pumps, and that development of the 3000 p.s.i. pumps be continued only as a secondary development program. Exhibit A contains a descriptive table of engine driven oil pumps.

HILMAN, J. Revised torsional vibration test for high speed engine driven accessories. (Army Air Forces. Experimental Engineering Section. EXP-M-57-536-262). Off. Pub. Bd., Report, PB 8118. 1941. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
Endurance tests of engine driven accessories are now being conducted with torsional vibration of ± 2° at speeds of 3000 r.p.m. (100 c.p.s.) or less, and ± 1° for speeds from 3000 r.p.m. to 4300 r.p.m.. The problem of anticipating, in lieu of actual data, the severity of torsional vibration to be encountered on the newly required high speed aircraft engine power take-off drives, and of determining a proper method of laboratory simulation of such vibration is the subject of this report. The expected engine vibration is discussed in Appendix I, and the angular acceleration due to torsional vibration is shown graphically in Exhibit A. The method of duplicating the vibration during laboratory endurance tests is covered in Appendix II and Exhibits B, C and D (diagrams of single universal joint, and double universal joint, and graph showing maximum increment vs. angle between shafts). It is concluded that a test procedure for simulating aircraft engine high speed power take-off drive torsional vibration can be set up on the basis of expected performance.

IRVING, DAVID E. Installation of the Birmann two-stage supercharger in the North American XB-28 and Vultee XP-54 airplanes. (Army Air Forces. Experimental Engineering Section. EXP-M-51-4412-1-1). Off. Pub. Bd., Report, PB 9759. 1942. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
The study indicates that the installation of this type of turbo-supercharger is feasible in the XB-28 with no major changes necessary in structure. Due to restricted space in the XP-54, installation is not recommended for this airplane. Two drawings illustrate the installation in both planes.

IRVING, DAVID E. Preliminary design of a high altitude night fighter airplane. (Army Air Forces. Engineering Division. ENG-M-51-4414-2-1). Off. Pub. Bd., Report, PB 9768. 1943. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
A report on the results of a study of a preliminary design of a single boom night fighter. Contains tables and a chart showing the estimated weights and performance of the airplane. It is a twin engine type with high service ceiling and in the 400 m.p.h. class. Drawings show the general arrangement and inboard profile of the plane.

IRVING, D. E. Weight reduction - B-17F and B-24D airplanes. (Army Air Forces. Engineering Division. ENG-51-4263-18). Off. Pub. Bd., Report, PB 9734. 1943. Price: Microfilm-50¢ - Photostat-$1.00
This study recommends weight reductions of 1896 to 2214 pounds for the B-17F and 1125 to 1416 pounds for the B-24D. It was found that excess weight was largely due to increased quantities of government furnished equipment regardless of the effect it had on overall utility. A breakdown of excess weight equipment is given for each plane and listed under three headings: (1) changes possible without major alteration; (2) changes involving redesign and affecting production, and (3) changes depending on theater of operation.

IRVING, D. E. Weight reduction - B-17F airplane. (Army Air Forces. Engineering Division. ENG-51-4263-18, Add. 1). Off. Pub. Bd., Report, PB 9733. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This is an addendum to the basic weight reduction report (PB 9734) and considers the control system. It is proposed to use magnesium alloy on certain parts of the elevator, rudder, and aileron systems, thus reducing weight by at least 15 pounds. Two drawings are missing from the report.

IRVING, D. E. Weight reduction - B-17F and B-24D airplane. (Army Air Forces. Engineering Division. ENG-51-4263-18, Add. 2). Off. Pub. Bd., Report, PB 9732. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
This progress report merely cites the action taken toward weight reduction as outlined in the basic report (PB 9734).

JACKSON, BRUCE. Wind tunnel test on Lear Aira wind driven generator. (Army Air Forces. Experimental Engineering Section, EXP-M-54-656-445). Off. Pub. Bd., Report, PB 10153. 1942. 2 p. Price: Microfilm-50¢ - Photo-$1.00
Subject wind driven generator by Lear Aira, Inc. type 1030-a serial No. 51 will deliver rated power at a minimum air speed of 128 miles per hour. It weighs, complete with the propeller, 5 pounds 14 ounces. The manufacturer's rating of the generator is 10 amperes at 12 volts at a speed of 4000 revolutions per minute. It is recommended that further development work be done in order to develop suitable types for Air Corps use. A chart of a Five Foot Wind Tunnel test is appended.

JAMES, HEIGHTON D. Beech AT-10 airplane - wood shrinkage. (Army Air Forces. Experimental Engineering Section. EXP-M-51-TR321-24). Off. Pub. Bd., Report, PB 10179. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Observations of airplanes in a hot, dry climate showed that considerable damage may be expected due to wood shrinkage. Fittings become loose as the wood dries. Recommendations are made for control at the factory, and when delivered in hot, dry climates.

JAMES, HEIGHTON D. Detail design data obtained from Wichita's aircraft manufacturers. (Army Air Forces. Experimental Engineering Section. EXP-M-51-/M878, Addendum 2). Off. Pub. Bd., Report, PB 6398. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Detail design practice followed by the Wichita Beech Aircraft Corp., Cessna Aircraft Co., Boeing Airplane Co., and Culver Aircraft Corp. The purpose of the visits was to obtain examples of detail design of wooden aircraft, as practiced by the industry to be incorporated in the ANC Wood Handbook. Sketches of details were made by committee members, Mr. Harold D. Hoekstra C.A.A., Mr. A. G. H. Dietz, Forest Products Laboratory, and Lt. H. D. James, Materiel Center. The manufacturers cooperated by supplying photographs, drawings, information pertaining to test loads and many valuable suggestions.

JAMES, HEIGHTON D. Meeting of ANC Executive Technical Subcommittee on Requirements for Wood Aircraft Structures. (Army Air Forces. Experimental Engineering Section. EXP-M-51/M878). Off. Pub. Bd., Report, PB 6397. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Comments on first meeting of this subcommittee at Washington National Airport on March 24-26, 1942, whose purpose is to act as a coordinating agency for the respective services for preparation of drafts of ANC bulletins with reference to the following subjects in regard to wood aircraft structures: (a) Methods of structural analysis; (b) strength of aircraft elements; (c) detail structural design. Changes in ANC-5, currently undergoing a revision to be known as the April 1, 1942, edition, were discussed.

KENNARD, D. C. Curtiss-Wright C-46A airplane - investigation of reported excessive vibration. (Army Air Forces. Engineering Division. ENG-51-C322-58). Off. Pub. Bd., Report, PB 6469. 1944. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
Report of results of vibration tests which were conducted at Wright Field on the C-46A airplane in flight. It was found that the objectionable vibration was due to resonance of the power plants on their elastic mounts in the range of 1400 to 1800 engine r.p.m. The important resonances were caused by propeller order and one-half order forcing functions. Vibrations from these sources can be prevented by installing engine mount vibration isolators having rubber elements of reduced stiffness so that the natural frequency in roll is 600 c.p.m. Other suggestions for the reduction of the adverse effects of vibration are made. Appendices contain a description of test setup, experimental procedure, and discussion of results; figure showing location of vibration pickups, graph indicating test conditions, and graphs presenting a harmonic analysis of vibratory responses.

KUIPER, C. J. Airborne Command - Army Air Force Conference, Wright Field - 4 January 1945. (Army Air Forces. Engineering Division. TSEAL-SF-672-21). Off. Pub. Bd., Report, PB 11671. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this conference was to determine requirements for carrying paratrooper supplies on cargo type aircraft and to obtain approval on material previously tested at Army Ground and Army Air Force Testing Grounds.

LOUGHLIN, W. J. Non-inflammable fluids for propeller anti-icing. (Army Air Forces. Engineering Division. TSELA-3C-581-164-8). Off. Pub. Bd., Report, PB 10122. 1944. 49 p. Price: Microfilm-50¢ - Photostat-$4.00
The isopropyl alcohol used as anti-icing fluid is highly inflammable and these flight tests were run to see if non-inflammable fluids developed by the Mellon Institute could replace it. The new fluids are trimethyl phosphate, and a 50 percent solution of ethylene glycol in water plus 1/16 percent amine #220. A new system of determining positive flow to the slinger rings and an accurate measurement of fluid flow were devised and are described. The tests included those to determine flow patterns and icing runs, and procedures for each type are presented. The tests showed both new fluids to be satisfactory and further tests were recommended to determine which of the two proves superior. Thirty-five photographs illustrating the report are included.

LOUGHLIN, W. J. Relative values of propeller anti-icing compounds. (Army Air Forces. Engineering Division. TSEPLG-581-126-6 Addendum 2). Off. Pub. Bd., Report, PB 10119. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Results of flight tests under simular icing conditions on Curtiss deicing compound no. 111 are presented. Flight tests showed good results at -5°C, but they became progressively poorer. The formula was approved as effective for 2 hours at -5°C. The advantages were ease of application and removal and short drying time. Disadvantages were rippling of surface, quick wear-off and short de-icing life under test conditions.

LOWNDES, H. B. JR. Structural tests-horizontal tail surfaces - North American AT-6D airplane. (Army Air Forces. Engineering Division, TSEAL-2-TR344-10, Add. 8). Off. Pub. Bd., Report, PB 10215. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests on the horizontal tail surfaces, fuselage, and control system of the AT-6D proved subject airplane structurally satisfactory in both balancing and pull-up conditions.

LOWNDES, H. B. JR. Structural tests on the flaps, ailerons, and their control systems of AT-6D airplane Serial No. 42-86475. (Army Air Forces. Engineering Division. TSEAL-2-TR344-10, Add. 10). Off. Pub. Bd., Report, PB 10217. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The flaps and flap operating system of the AT-6D are structurally satisfactory for 100 percent ultimate load in the 20 degree open position and for 150 percent in the 45 degree open position. The aileron and aileron control system are satisfactory for 100 percent ultimate load.

LOWNDES, H. B. JR. Structural tests on the vertical tail surfaces, fuselage, and control system of North American AT-6D airplane. (Army Air Forces. Engineering Division, TSEAL-2-TR344-10, Add. 9). Off. Pub. Bd., Report, PB 10216. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Static tests on vertical tail surfaces, fuselage, and control system of the AT-6D found it to be structurally satisfactory in the balancing and pull-up conditions.

LUSK, R. J. Army-Navy Aeronautical Specification, regulator, generator voltage. (Army Air Forces. Engineering Division, ENGO54-656-290 AM). Off. Pub. Bd., Report, PB 10150. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Changes recommended in Army-Navy Specification AN-R-1, dated January 7, 1943, at the Army-Navy Aeronautical Conference 43-43. AN-R-1, Regulator, generator voltage was amended and approved with the following exceptions and additions: (1) Show more clearly the 2 methods of obtaining the equalizing voltage drop in Fig. 2, (2) place terminal locations to correspond to Drawing 3080-4 when revised, (3) include a reference to the sand valve at bottom of sand test chamber in Fig. 3, (4) change terminal locations to correspond with regulator bases now being procured under Drawing 3080-1, on proposed drawing of sub-base, (5) make an added drawing of airblast tube bracket which may be easily attached to sub-base assembly.

LUSK, R. J. Control equipment and circuits, aircraft electrical system. (Army Air Forces. Engineering Division. ENG-M-54-656-290SSS). Off. Pub. Bd., Report, PB 10139. 1943. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
A report of conference discussions pertaining to development of D.C. control equipment and the possible improvement of control and power circuits. Improvements made in the Auto-Ohm voltage regulator are noted.

LUSK, R. J. Mount, vibration, U.S. Rubber Company part no. B-323 (40-durometer rubber). (Army Air Forces. Engineering Division. ENG-54-656-290AZ). Off. Pub. Bd., Report, PB 10152. 1943. 5 p. Price: Microfilm-50¢-Photostat-$1.00
The subject vibration mount was designed expressly for use in voltage regulator sub-base assemblies built according to Army Air Forces drawing no. 40D8445-2, because of the excessive number of failures encountered on sub-base assemblies with U.S. Rubber Company's number A-321 vibration mount (30 durometer rubber) or equivalent. The failures were usually due to failure of the metal to rubber bond. Failures were caused largely by tearing, straining, or twisting of the rubber, particularly around the metal end plates during installation of the sub-base assembly in the airplanes due to the difficulty of obtaining a firing hold with a wrench on the thin metal end plates. On model B323 these plates were increased in thickness and the metal to rubber bond area was increased. As a result of the tests it was concluded that the vibration mount B-323 (40-durometer rubber) or equivalent should be substituted for U.S. Rubber Company's vibration mount No. A-321 (30 durometer, rubber or 50 durometer rubber) for use on voltage regulator sub-base assemblies AAF drawing no. 40D8445-2. Diagrams included.

LUSK, R. J. Regulator, generator voltage, carbon-pile type, Leece-Neville part No. 24700, serial 12-X. (Army Air Forces. Engineering Division, ENG-54-656-290AP). Off. Pub. Bd., Report, PB 10151. 1943. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
Results of laboratory tests to determine suitability of Leece-Neville voltage regulator Serial 12-X for use in military aircraft. Trial order of 5000 was approved, future orders depending on improvements. Appendix contains a wiring diagram, a description, and graphs of test data.

LUSK, R. J. Voltage regulator, Eclipse Aviation part No. D-106107. (Army Air Forces. Engineering Division. ENG-54-656-290AH). Off. Pub. Bd., Report, PB 10148. 1943. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Service tests proved that operation of this carbon pile type

voltage regulator requires that the regulator be installed in a horizontal position in the aircraft. This is due to the arrangement of the carbon discs making up the carbon stack, each disc needing to carry its share of the total resistance.

MASON, W. E. Fuel distribution on Pratt & Whitney R-1830-65 engines equipped with Chandler-Evans Corporation 1900 CPB-3 carburetors. (Army Air Forces. Engineering Division. TSEPL-5-519-177). Off. Pub. Bd., Report, PB 6880. 1944. 28 p. Price: Microfilm-50¢ - Photostat-$2.00
Report of Power Plant Laboratory tests whose purpose was (1) to improve the fuel distribution characteristics of the R-1830-65 engine by redesigning the fuel discharge nozzle of the Chandlers Evans 1900 CPB-3 carburetor, (2) to lower the maximum cylinder head temperature and reduce the spread between the maximum and minimum cylinder head temperature during engine operation and (3) to improve the wide open throttle operating characteristics of the engine. Report includes a description, discussion of procedure and results of the test, and graphic presentation of test results.

MASON, W. E. Fuel inlet pressure requirements at war emergency power ratings, Çaco 58 CPB-4 carburetors on R-3350 engine. (Army Air Forces. Engineering Division. TSEPL-5-519-179). Off. Pub. Bd., Report, PB 6881. 1944.
4 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of Power Plant Laboratory test to determine the minimum fuel inlet pressure requirements for the Chandler-Evans 58 CPB-4 carburetors at war emergency power airflows as installed on the R-3350 engine. It is concluded from the data presented in the Power Plant curves included in the report that the minimum stable fuel inlet pressure for operation of the carburetor at 21,000 pounds per hour airflow (approximately 2550 BHP for the R-3350 engine) is 23 pounds per square inch, and the minimum fuel inlet pressure requirements at 23,000 pounds per hour airflow (approximately the requirement for 2900 BHP on R-3350 engine) is 25 pounds per square inch.

MASON, W. E. Tests of PT-13G-1 carburetor, serial no. 81766, stock list no. 392351-13. (Army Air Forces. Engineering Division. TSELA-3B-519-175). Off. Pub. Bd., Report, PB 6879. 1944. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of Power Plant Laboratory tests of Stromberg slinger type, carburetor as used on Pratt and Whitney R-2800-21, -41 engines to determine the source of restriction causing high fuel inlet pressure requirements at war emergency power rating. It is concluded that there is no restrictions to fuel flow on R-2800-21, -41 engines in either the PT-13G-1 carburetor, slinger nozzle or in the engine fuel passages up to the slinger proper. It is further concluded that since fuel inlet pressures up to 24 lbs. per sq. in. have been required for actual WER operation of R-2800 engines equipped with slinger type injectors, high fuel pressures are being built up in the fuel slinger at war emergency powers and transmitted back through the diffuser passages, slinger nozzle and carburetor fuel passages thus necessitating high fuel inlet pressures to overcome these back pressures and force the proper amount of fuel to the engine at these powers. Report contains a graph showing fuel flow vs. fuel inlet pressure with constant metering suction.

MILANOVITS, W. T. Opener-ground release, parachute automatic. (Army Air Forces. Engineering Division. TSEAL-50-10-378). Off. Pub. Bd., Report, PB 11662. 1945.
2 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this report is to determine the operative characteristics of an aneroid type combination automatic parachute opener and ground release device submitted by the Minnesota Tool and Manufacturing Corporation, Minneapolis, Minnesota.

MILLER, W. B. Destruction tests of the horizontal and vertical tail surfaces of the Curtiss AT-9 airplane. (Army Air Forces. Experimental Engineering Section, EXP-M-51-TR329-17, Add. 15). Off. Pub. Bd., Report, PB 10202. 1942.
3 p. Price: Microfilm-50¢ - Photostat-$1.00
The horizontal tail surfaces proved satisfactory for 160 percent ultimate load and the vertical tail surfaces were satisfactory in varying degrees for each part. A description of the tests is given, and recommendations were made to the manufacturer for improvement.

MILLER, W. B. Ground loop test of the Curtiss AT-9 airplane. (Army Air Forces. Experimental Engineering Section. EXP-M-51/TR329-17, Add. 9). Off. Pub. Bd., Report, PB 10198. 1942. 1 p. Price:Microfilm-50¢ - Photostat-$1.00
Report of test made on March 6, 1942. The required loads are: vertical - 7345 pounds; side- 7345 pounds (at ground): aft-4040 pounds (at ground). The structure supported 100 percent ultimate load without failure, therefore the AT-9 airplane is structurally satisfactory for the above-mentioned loads.

MILLER, W. B. Inspection of the P-51H airplane. (Army Air Forces. Engineering Division. ENG-TSEAL-5E-670-25). Off. Pub. Bd., Report, PB 11677. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Inspection of P-51H airplane to investigate compliance with specifications covering personal equipment items and provisions for their use. This included life rafts, parachutes and miscellaneous equipment which were tested for pilot accomodation, escape provisions, safety shoulder harness. All were considered adequate.

MILLER, W. B. Structural tests of the seat of the Curtiss AT-9 airplane. (Army Air Forces. Experimental Engineering Section, EXP-M-51/Tr 329-17, Addendum 11). Off. Pub. Bd. Report, PB 10199. 1942. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of static tests made on March 11, 1942. The pilot's seat and supporting structure supported 100 percent of the required ultimate loads.

MOORHEAD, M. M. Aircraft steam turbo alternators. (Army Air Forces. Experimental Engineering Section, EXP-M-54-656-535). Off. Pub. Bd., Report, PB 10232. 1942.
2 p. Price: Microfilm-50¢ - Photostat-$1.00
A 22.5 Kilowatt turbo alternator suitable for alternating current electrical systems on large airplanes is being designed by Lyman Mfg Co. By introducing blast cooling, the output may be raised to 50 Kilowatts without redesigning the turbine. The weight of one unit inclusive of turbine fan, condenser, alternator, two waste heat boilers, and all pumps and controls is estimated to be 850 pounds, plus armor protection to enemy fire because of the vulnerability of the steam system. It was recommended that the development of this plant be initiated.

MOSS, B. L. Holley portable stabilizer test unit. (Army Air Forces. Engineering Division. TSELA-3B-519-172). Off. Pub. Bd., Report, PB 6877. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of results of Power Plant Laboratory recheck to determine the characteristics of the vacuum system of the Holley portable stabilizer test unit. The vacuum system was found to be satisfactory for the required testing of stabilizer valves provided the inlet air pressure was maintained in excess of 55 pounds per square inch, and it was recommended that the Holley portable test unit be adopted for Army Air Forces use. Graph shows results of the test.

MOSS, B. L. Metering characteristics of CECO 58CPB4. (Army Air Forces. Engineering Division. TSELA-3B-519-169). Off. Pub. Bd., Report, PB 6876. 1944. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of air box test to determine if Chandler-Evans type 58CPB4, Serial no. 22079 carburetor metered within limits. The carburetor was run in air box "A" of the Power Plant Laboratory with the standard nozzle bar and found to meter within the limits. The original nozzle bar was taken off and a special line leading from the load compensator to the impeller injection installation was installed. A test was then started to learn whether the new design affected the original metering. Due to the fact that the impeller injection line fitting failed during the initial run, no conclusive data were obtained. Graphs show results of experimentation.

MULLIEC, H. G. Engine motion. (Army Air Forces. Experimental Engineering Section. EXP-M-57-536-344). Off. Pub. Bd., Report, PB 8115. 1942. 14 p. Price: Microfilm-50¢ - Photostat-$1.00
The subject of this report is the problem of assembling factual data and anticipated data to determine the maximum movements of the power take-off or generator drive during take-off and abrupt manoeuvers. Appendix I presents general information on the problem. Appendix II, including graphs, cover the method of determining these motions and discussions on the probability of reaching different combinations of maximum movements or deflections at the same time. Report contains a table of compiled data for four aircraft engines.

NIEHAUS, JAMES J. Corrosion of aluminum alloy tubing in cooling systems of Rolls Royce V-1650 engines, Curtiss P-40F airplanes. (Army Air Forces. Experimental Engineering Section. EXP-M-57-523-163). Off. Pub. Bd., Report, PB 8133. 1942. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
The experimental data available shows that the selective aluminum corrosion in the subject P-40F aircraft is a characteristic of chloride contaminated ethylene glycol water coolant. It appears that there are two possible sources of chloride contamination: washing operations which are not sufficient to properly clean the radiators of insoluble salts and residual flux, and chloride contaminated tap water. Removal of the salts which lined the interior of the brass core tubes was effected by thoroughly flushing the radiators with an aqueous 10% solution of Rochelle salts. Appendices present an analysis of corrosion products, fluxes and washes used on Curtiss P-40F Prestone radiator, the method of cleaning radiators, and an analysis of Curtiss coolant fluid.

OLSON, RONALD L. Studies of escape hatches. (Army Air Forces. Materiel Command. Engineering Division. ENG-49-696-32BB). Off. Pub. Bd., Report, PB 6960. 1944. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a brief preliminary report concerning a method of investigation of escape hatch problems in bomber type airplanes. Wooden mock-ups simulating types of escapes were used in the study. Individuals of various sizes and wearing various types of clothing and equipment went through the hatches, the size of the openings being diminished until difficulty of exit was experienced. A study was made of the "Parachute Questionnaire" reports in the Office of Flying Safety, at Winston-Salem, N.C. These consist of several thousand first-hand accounts of bail-outs and escapes from planes. It was concluded that certain of the hatches on specified bombers were too small.

PARKE, NATHAN G., ZIRKIND, RALPH, and SUNDAY, PHILIP M. The estimation of the performance of aero-thermo-dynamic power plants. (Navy Department. Bureau of Aeronautics. Aviation Design Research Section, Report M-37). Off. Pub. Bd., Report, PB 8175. 1945. 73 p. Price: Microfilm-$1.00 - Photostat-$5.00
The Aviation Design Research Branch has been called on in the past to make estimates as to the applicability of various types of aero-thermo-dynamic power plants for naval aircraft. This report contains a review of the methods previously used and derives a more accurate and rapid means of estimation. It provides a discussion of the underlying physical principles. The principles are applied to the Joule Ideal Cycle (which consists of two isobars and two isentropics and is the characteristic cycle for ram-jets, turbo-jets, and turbo-propellers) and its modification by the use of intercoolers, regenerators, and reheaters.
Contents: (A) Introduction; (B) The Joule Ideal Cycle; (C) The modification of the Joule Cycle; (D) The effect of viscosity; (E) The effect of altitude; and (F) Numerical examples. There are tables, illustrations, and a bibliography. A list of 16 figures is appended, but these figures are missing from this copy. See also PB 8176, by Zirkind.

PARKE, N. G. Ideal cycle analysis of jet turbines. (Navy Department. Bureau of Aeronautics. Aviation Design Research Section. Report M-21). Off. Pub. Bd., Report, PB 8156. 1944. 29 p. Price: Microfilm-50¢ Photostat-$2.00
This report presents ideal cycle analysis as a means of analysing proposals for gas turbine units of the jet thrust and turbine propeller types. The principle results are contained on the semi logarithmic graph which contains: (1) Curve of specific fuel consumption based on the horsepower in the hot gases leaving the turbine blades before energy has been taken from the gases in any form for the purpose of propelling the airplane; (2) in order to take account of the decrease in propulsive efficiency as the mass flow of a jet is decreased, and its speed increased an efficiency factor is introduced and the equations for computing it noted on the graph; (3) equations are also added for the purpose of estimating the change in the specific fuel consumption of gas turbine in the throttled condition. The theoretical basis of this graph and the annotated equations will be found in the body of the report.

PARKE, N. G. Informal survey of the mathematics of pilotless aircraft paths. (Navy Department Bureau of Aeronautics. Aviation Design Research Report I-14). Off. Pub. Bd., Report, PB 8152. 1945. 64 p. Price: Microfilm-$1.00 - Photostat-$5.00
This survey is a mathematical analysis of path systems for guided missiles. The load factors, fuel requirements, tracking, computing, and directional equipment for pilotless aircraft all depend upon more knowledge of possible paths. Classification of paths with names such as line of sight, homing, partial navigation, scopodrome, Ballodrome, brachydrome, should be correlated with the differential equations which govern them. All mathematical research in this study applies to two dimensional paths. The "g" - navigation scheme proposed by Raytheon is criticized. The whole problem is given in the form of equations with the difficulties of interpretation brought out. The appendix includes a mathematical discussion of present paths from the standpoint of the target and a bibliography of 46 items which bears on the mathematical aspects of the path problem.

PARKE, N. GRIER, III. J. P. Motor performance analysis. Revised Aug. 24, 1943. (Navy Department. Bureau of Aeronautics. Aviation Design Research Section. A.D.R. Report R-26). Off. Pub. Bd., Report, PB 8155. 1943. 114 p. Price: Microfilm-$1.50 - Photostat-$8.00
For the purpose of performance analysis the Aviation Design Research Section extended the jet propulsion motor performance calculations to cover a wider range of mach numbers and operating conditions than those presented in the original Westinghouse report on this subject. This report presents the basic changes made in the mathematical point of view and in the numerical methods used for obtaining the final performance graphs. Included are 42 diffuser inlet corrective sheets.

PARKE, N. GRIER III. and GODA, H. L. Remarks on the number of airplanes required for long range transport by medium length hops and air transported fuel. (Navy Department. Bureau of Aeronautics. Preliminary Airplane Design Section. Report M-7). Off. Pub. Bd., Report, PB 8164. 1942. 52 p. Price: Microfilm-$1.00-Photostat-$4.00
Presentation of a method of estimating number of aircraft needed to transport cargo over a given range. The analysis has been based on Breguet's Range Formula. Two operation cycles have been defined; the one leads most easily to the derivation of certain formulae and the other bears the closest resemblance to actual operating conditions. The results of the analysis fall into 3 groups: (1) Three fundamental graphs of general applicability; (2) three operating tables, including total number of planes, and planes operated on a shuttle basis; (3) table showing the specific carrying capacity of the N types for 5 ranges.

PECK, FRED J., JR. Structural tests - R.C.A.F. AT-6C outer wing panels. (Army Air Forces. Engineering Division, ENG-M-51-TR344-10, Add.7). Off. Pub. Bd., Report, PB 10214. 1943. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
The results of this test proved the R.C.A.F. outer wing panel supported 100% of the ultimate load in the negative high angle of attack condition and 115% of the ultimate load in the positive high angle of attack condition. A description of the tests and deflection curves of the loading are included.

PERROD, KENNETH E. Respiratory requirements for flying a Link Trainer. (Army Air Forces. Experimental Engineering Division. EXP-M-49-696-21). Off. Pub. Bd., Report, PB 5154. 1942. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
This report is to record pulmonary ventilation of subjects sitting at rest and also while flying a Link Trainer, in smooth and rough weather, at ground level. The volume of oxygen was measured by recording pressure drop in cylinders of known volume; details of the method are given in Appendix I. In Appendix II are shown the total volumes of oxygen breathed during the two-hour test period by each subject. The three tests are shown in Appendix III. Appendix IV lists the ventilation rates of all subjects ranked according to decreasing body surface area. Conclusions are included.

PETAJA, A. E. Aircraft power plant installation design to reduce the fire hazard. (AAF ATSC Engineering Division. Technical Note TN-57-3). Off. Pub. Bd., Report, PB 8140. 1945. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this report is to present the recommendations covering Aircraft Power Plant Installation Design to reduce fire hazard. These recommendations are based on the past experience of the Army Air Forces with fires in service, and on the results of several investigations on fire hazard in aircraft power plants. A bibliography is included.

PETAJA, A. E. Nose shutter installation on L-1 airplane, Army Air Forces no. 40-228. (Army Air Forces. Engineering Division. ENG-57-435-73). Off. Pub. Bd., Report, PB 8144. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of trial installation and flight tests of Vultee Aircraft, Incorporated, nose shutter installation on L-1 airplane, in the Engineering Shops Laboratory and at Wright Field. The original nose shutter assembly required considerable rework and refitting before it could be installed and made to work at all on the airplane. It was concluded that the Vultee installation as received from Vultee Aircraft, Incorporated, and as subsequently modified is unsatisfactory. The entire rotating ring mechanism should be eliminated from this design and push-pull rods be installed to operate the shutter arms. It is recommended that the entire shutter be redesigned before any more of its type are secured. Report contains a description of the test and modifications made; also Exhibit K - a graphy giving the performance curves of nose shutter installation, showing variation of cylinder heat temperature with shutter closure. Exhibits A-J are not included.

PETAJA, A. E. 100 hour endurance test on fire extinguisher brackets for R-2800 series engines for C-46 airplanes. (Army Air Forces. Engineering Division. TSEPL-5-416-226). Off. Pub. Bd., Report, PB 8143. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of results of test conducted by the Power Plant Laboratory from April 20 through May 16, 1945. An excessive number of cylinder failures in the R-2800 engines installed in C-46 airplanes were attributed to loosening of the cylinder hold-down nuts that were securing the fire extinguisher brackets. To eliminate the brackets used under the studs, the 8th Air Depot devised a clamp that was independent of the hold-down nuts. Replacement brackets were tested and it was found that clamps that were properly manufactured and installed had no harmful effect on the engine. Detailed test procedure and results of the test (tables showing torque required to remove pal nuts and cylinder hold-down nuts after 100 hour test) are given in appendices. Photographs referred to in the report are not included.

PETAJA, A. E. Winterization of L-1A airplane no. 41-19081. (Army Air Forces. Engineering Division. ENG-57-436-5). Off. Pub. Bd., Report, PB 8145. 1943. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of the winterizing of L-1A airplane in regard to the special considerations given the nose shutter and carburetor heat installations. It was winterized in the Engineering Shops Laboratory in accordance with current directives in effect for the winters of 1942 and 1943. The airplane has subsequently been sent to Alaska and to date no reports on its operation have been received by the Power Plant Laboratory. The carburetor pre-heater was modified to increase the rise of carburetor air from 75°F to at least 90°F. A push-pull control using a standard AN-4010 control quadrant located in the pilot's cockpit near his right knee was constructed to replace the nose shutter control of the cable and screw jack type, and baffles were installed on the rear half of each shutter vane. "Exhibits" which are referred to in the report, are not included.

REYNOLDS, L. B. Static test of the Berkey and Gay plywood fuselage section for the North American AT-6C and AT-6A airplane. (Army Air Forces. Engineering Division, EXP-M-51TR344-10, Add. 4). Off. Pub. Bd., Report, PB 10211. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This memorandum report corrects static test data given in EXP-M-51TR344-10, Add. 1. This correction applies to load requirements for fuselage and tail sections of the AT-6C and AT-6A, and tables indicate the percent of total load requirements met by these two airplanes in the new tests.

REYNOLDS, L. B. Structural tests of the Northrup riveted magnesium wing panel for BC-1 airplanes. (Army Air Forces. Experimental Engineering Section, EXP-M-51/Str 214, Add. 3). Off. Pub. Bd., Report, PB 6447. 1942. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
Reports results of tests which indicated that this riveted magnesium wing, as reinforced for the final high angle of attack test, was structurally satisfactory for use on BC-1 airplanes with the gross weight restricted to a maximum of 5300 pounds. Photographs listed are omitted from this copy.

RICHARDS, W. H. Oil hose assembly part #5029 for heater and fuel tank assembly. (Army Air Forces. Experimental Engineering Section. U-EXP-M-59-679-13). Off. Pub. Bd., Report, PB 12374. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report on airplane fuel hose which is unsuitable because of the possibility of kinking, which in turn causes weak spots.

RISHEL, JAMES B. Towline drag. (Army Air Forces. Aircraft Laboratory. TSEALC-4564-2-16). Off. Pub. Bd., Report, PB 6968. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a report on tests conducted to determine the drag on standard AAF tow rope assemblies. The drags of two types of 11/16 inch towlines were determined: (1) the single towline assembly, part No. 43D536-1; and (2) the dual towline assembly, part No. 43D536. Drag tests on the single towline showed that the line whipped considerably when towed at 120 and 130 m.p.h. I.A.S. while there was practically no whipping on the dual towline. A table and graph showing drag loads at various speeds is given.

ROGERS, O. R. and MAGRATH, H. A. Consolidated B-24D airplane comparative vibration and noise tests using standard and paddle blade propellers, November 23, 1942. (Army Air Forces. Experimental Engineering Section, EXP-M-51/VF32). Off. Pub. Bd., Report, PB 6467. 1942. 23 p. Price: Microfilm-50¢ - Photostat-$3.00
Tests carried out in flight on a B-24D airplane in order to determine whether the used wide blade propellers induces vibrations which are detrimental to the airplane and to compare the vibratory response and sound levels to those measured when the airplane is equipped with standard propeller blades. The airplane was a Consolidated B-24D equipped with 4 Pratt and Whitney R 1830-43 engines, each driving 3 blade Hamilton Standard Hydromatic propellers through 16.9 epicyclic reduction gearing. For the wide blade test, the blades on the two inboard engines were changed to wide propeller blades. The tests showed that vibration amplitudes of the structure and the fuselage skin, at 3 times propeller speed, showed no appreciable increase when wide blades were used in lieu of the standard blades. The vibrations of the engines of the load carrying members and of the fuselage wall are not increased by the use of wide

blade propellers, although there maybe local increase in the pilots' compartment panels, floor or equipment. There is an increase of sound levels of 6 decibels in the pilots' compartment at 2700 RPM, but this is not sufficiently great as to be indicative of a serious vibratory condition.

SADLER, C. L. Conference on cabin supercharging, May 15, 1942, at the Materiel Center. (Army Air Forces. Experimental Engineering Section. EXP-M-57-522-154). Off. Pub. Bd., Report, PB 8149. 1942. 12 p. Price: Microfilm-50¢ - Photostat-$1.00
Confirmation of the conference held for the purpose of discussing the question of suitable pressures to be maintained in the cabins of pressurized cabin airplanes at various flight altitudes, and the effect of the altitude pressures upon related equipment and on the airplane itself. As a result of the conference the following conclusions were reached: (a) The physiological considerations, particularly in the use of airplanes of extended flight duration, warrant the structural and mechanical problems attendant to the maintaining of a cabin pressure such that oxygen equipment will not be required at normal flight altitudes; (b) constant pressure ratio control of cabin pressure is, in general, superior to constant pressure differential control at the extremely high altitudes, in view of the endorsement by the great majority of the cabin supercharger manufacturers of constant pressure ratio control as mechanically desirable and by the Aero Medical Research group as physiologically desirable. It is recommended that schedules of cabin pressurization at various flight altitudes, as indicated graphically on Exhibits A and B be adopted and incorporated in the applicable requirements of A.F. Specification no. R-28510.

SAXSA, F. J. Determination of the cranking characteristics of the Westinghouse Model 19B jet propulsion unit. (Naval Air Materiel Center. Naval Air Experimental Station. Aeronautical Engine Laboratory, TED Project No. NAM-04217). Off. Pub. Bd., Report, PB 11359. 1945. 29 p. Price: Microfilm-50¢ - Photostat-$2.00
This series of tests at various ambient air temperatures ranging from + 20° to - 20°F using various oils deals with torque increase, angular relationships between the starter and the unit, effect of increased RPM on cranking power, and other factors relative to the cranking process as affected by temperature and oil viscosity. There are 23 graphs illustrating the test results.

SCHENCK, J. R. Report on a visit to Glenn L. Martin Co., Baltimore, Md. (Army Air Forces. Experimental Engineering Section. EXP-M-54-671-69). Off. Pub. Bd., Report, PB 11651. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A memorandum report concerning the possibility of stowing a Type A-3 raft in the raft compartment of the B-26B bomber. Recommendations for further improvement of the raft storage compartment are included.

SCHROEDER, R. J. Cabin pressurization and conditioning systems for jet propelled aircraft. (Army Air Forces. Engineering Division. TSEPL-5-522-272). Off. Pub. Bd., Report, PB 8150. 1945. 18 p. Price: Microfilm-50¢ - Photostat-$2.00
The system described in this report was evolved as the result of a series of conferences between Air Technical Service Command personnel and interested accessories and airframe manufacturers held during the period 10 February through 21 March 1945. Design work and tests on flow control valves had disclosed that it was difficult to design a pressure and temperature compensated flow control valve without incurring excessive pressure drop across the valve in most controlling positions. It was decided to combine the flow valve and mixing valve into a single valve package located upstream of the cooling means. Actuation of the mechanically linked valves is to be by a single electric motor. Detailed conclusions on design and performance specifications for each component of the system are summarized in Appendix I. It is intended that the requirements discussed therein be the basis for complete AAF specifications on the overall system, and each component thereof. Report also contains a schematic drawing of the new system, and graphs showing the cabin pressureschedule for pursuit aircraft and for bombardment aircraft.

SCHULZE, J. O. Fillet cracking in hollow steel propeller blades. (Army Air Forces. Engineering Division, ENG-63-590-57-80). Off. Pub. Bd., Report, PB 7992. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report corrects page 6 of Memorandum Report ENG 58-590-57-76 which is to have paragraph 21 deleted, and the substituted paragraph on page 2 of this report inserted. The change includes the manufacturers' standard practice of checking incoming Cu for electrical resistance on a 5 ft. length from both ends of each coil received. Actual analysis of specimens has shown a minimum 99.93% Cu.

SEDAM, HARRY W. Runway markers. (Army Air Forces. Engineering Division. ENG-54-656-763). Off. Pub. Bd., Report, PB 9826. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
A test of four commercial double-lens runway markers for ultimate compressive strength showed them to be from 10 to 25% of the minimum requirements of Army-Navy specifications.

SHAW, R. W. Reduction of maximum acceptable oil consumption limits for Pratt & Whitney engines. (Army Air Forces. Engineering Division, W-U-TSEPL-5-9460-2). Off. Pub. Bd., Report, PB 7424. 1945. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
To clarify certain misunderstandings which have arisen in connection with memorandum report No. W-U-TSEPL-5-9460-1, dated 12 March 1945. The purpose of subject report was to show the need for lower limits for specific oil consumption and additional requirements with respect to compatibility. There was no intent to infer that either Pratt & Whitney or the licencees are delivering engines to the AAF which are not within the present specification requirements with respect to oil consumption.

SHERER, R. C. B-25 airplane, life raft installation, type A-3 raft. (Army Air Forces. Engineering Division. ENG-54-671-161C). Off. Pub. Bd., Report, PB 11689. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
An inspection of the "mock-up" raft compartment at the aircraft factory showed it suitable for accommodations of the Type A-3 life raft with accessories.

SHINNERS, R. J. Endurance test of AAF type C-17 portable ground power plant, American Aircraft Manufacturing Company, Dayton, Ohio. (Army Air Forces. Engineering Division. TSEPE-656-1459D). Off. Pub. Bd., Report, PB 9993. 1945. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
The results of this test show the unit failed in respect to the exciter commutator, the shaft coupling key on the blower drive gear and excessive spark plug fouling. Appendices give the schedule and conditions of the test, graphic results of sea level calibration, extracts from the daily log of the tests, photographs of the unit and the failed parts, and an analysis of test failures.

STEIN, R. A. Conference on Cornelius compressor, Project AE4C-65. (Army Air Forces. Engineering Division. U-TSEPL-5-9558). Off. Pub. Bd., Report, PB 8141. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
A conference was held at the Power Plant Laboratory on July 10, 1945, to discuss the many unsatisfactory reports on failures of the compressor in the bomb-bay door installation of the B-29 airplane. It was concluded that a change in oil might provide a temporary fix to greatly reduce the number of failures, but that changes in the installation should be investigated immediately to determine a more permanent solution.

STEIN, R. A. Tests on B-29 air compressor installation, Project no. AE-4C-65. (Army Air Forces. Engineering Division. U-TSEPP-9558, Add. 1). Off. Pub. Bd., Report, PB 8142. 1945. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of the action taken as per the recommendations of Memorandum Report U-TSEPL-5-9558, on the subject project, dated 12 July 1945. One B-29 airplane, no. 42-63672, at Wright Field, was equippped with test equipment so that the cylinder head temperature on all three cylinders of the front

and rear air compressors and the ambient temperature of the air flowing through the discharge duct of the compressor enclosure could be measured. Data taken during several flights indicate that the compressor in the original installation did not cool properly when operated at 1500 p.s.i. or 1000 p.s.i.. Two other configurations were tested. It was concluded that the primary cause of failure of the Cornelius model 32R200 air compressor in service was overheating due to the enclosure and ducting arrangements, that the installation of cooling scoop provided sufficient additional air flow to cool the compressor satisfactorily, and that the compressor would operate satisfactorily if not enclosed by the present installation. Appendix contains tabulated data taken during test flights. Photographs to which reference is made are not included in this report.

STEPHENS, J. H. Method of stitching skirt band suspension line tabs to standard parachute canopies. (Army Air Forces. Engineering Division. ENG-46ER-670-27). Off. Pub. Bd., Report, PB 11692. 1944. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests made to furnish information relative to the strengthening of the suspension line tab on the skirt of standard parachute canopies. Samples of three different methods of sewing the tab at the skirt of the canopy were prepared as shown in Exhibit A of the report. These were then pull tested. The indications from the pull tests showed that of the three new methods tested, the one with the zig-zag stitch running with the warp gives the most strength. This is considerably stronger than the regular method of attachment. Four drawings included.

STEVENS, D. G. Trainer, Type N-7 (Formation demonstration stand) and Trainer, Type N-6 (Map peg board). (Army Air Forces. Engineering Division. TSEPE-668-208). Off. Pub. Bd., Report, PB 10297. 1946. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
In order to close out E.O. No. 668-171, which was established to cover the initiation and standardization of specifications for the above subjects.

STULEN, FRANK L. Conference on the YR-4A main rotor spar failure. (Army Air Forces. Engineering Division. ENG-52-582-3-4). Off. Pub. Bd., Report, PB 6908. 1943. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
Failure of a main rotor spar on a Sikorsky YR-4A helicopter was caused by a fatigue crack at the small end of the outboard hole in the spar. It was judged that the taper bolts were placed too close to the end of the cuff, and the collar on the cuff gives it excessive stiffness. Vibration tests of all joints were recommended, and the design changed so that the shoulder on the cuff be removed, and the cuff made with its outboard end tapering gradually down to the outside diameter of the spar; that the inner sleeve where used be fishmouthed or tapered at their outboard end. The total wall thickness of the spar and inner sleeve should be .125 inch and the two outboard taper bolts omitted in all joints using taper bolts.

TAYLOR, JOHN E. Air box calibration of XP-51G airplane induction system elbow. (Army Air Forces. Engineering Division. TSELA-3B-519-168). Off. Pub. Bd., Report, PB 6875. 1944. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests to provide a method of airflow measurement on the XP-51G airplane by the air box calibration of total and static pressure sampling devices installed in the induction system elbow. Ordinary methods of airflow measurement are not available because subject airplane incorporates the Rolls-Royce Merlin 14SM engine, which does not have a conventional carburetor. In view of the good stability of differential pressure furnished by the system during calibration tests it is believed possible to obtain airflow readings in flight which involve a maximum of 2% deviation from air box values. This estimate requires a differential pressure measuring instrument which will conform to the Air Technical Service Command requirement such as the F-1 airspeed indicator with a readability of ± 0.5 m.h.p. and a calibration spread of not more than 1-½ m.p.h.. Appendices contain a description and discussion of the tests, graphs showing test results, and a schematic diagram of the air box installation.

TITZLER, H. N. Study of Westinghouse electric remote propeller drive for long range bombers. (Army Air Forces. Engineering Division. ENG-M-51-4412-1-6). Off. Pub. Bd., Report, PB 9764. 1943. 8 p. Price: Microfilm-50¢ Photostat-$1.00
A study and comparison of the Westinghouse power system with a conventional drive system indicates that in the XB-35 it would be over 3000 pounds heavier than a conventional drive resulting in a range decrease of about 15% for such aircraft and lower overall efficiency. A drawing illustrates the installation of the Westinghouse system.

TKACH, W. M. Tests on the slip ring assembly for the A-1 turret used on the B-17 airplane. (Army Air Forces. Engineering Division, U-ENG-53-553-668). Off. Pub. Bd., Report, PB 9876. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests of the assembly showed that with certain minor modifications it would satisfactorily replace one previously used which failed.

U. S. ARMY. ENGINEER CORPS. ENGINEER BOARD. Emergency landing mat for airfields; fourth interim report, October 1, 1941 - March 15, 1943. (Report 735). Off. Pub. Bd., Report, PB 11178. 1943. 50 p. Price: Microfilm-50¢ - Photostat-$4.00
This report covers the development program for the emergency landing mat for airfields project, includes consideration of both heavy and light type mats, and gives the results of service tests. Performance reports, experimental work with new types, and an investigation of the transportation problem are considered. Photographs and drawings illustrate the various types of mats.

U. S. ARMY. ENGINEER CORPS. ENGINEER BOARD. Extruded aluminum landing mat for B-29 airplanes. (Report 939). Off. Pub. Bd., Report, PB 11181. 1945. 24 p. Price: Microfilm-50¢ - Photostat-$2.00
An investigation of the possibilities of the extrusion process for producing a heavy duty aluminum alloy airplane landing mat satisfactory for B-29 airplanes. It is a study of various designs and tests, and the selection of the one having the best performance possibilities. Quantity production is one of the factors considered. Drawings of the various designs are included, and conclusions are reached as to which is best.

U. S. ARMY AIR FORCES. Isopropyl alcohol January 28, 1943. Air Corps jet installation. (ENG-M-57-523-302). Off. Pub. Bd., Report, PB 6476. 1943. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
This report presents in charts data obtained from a series of test runs on alcohol de-icing with isopropyl alcohol, and with solox, at various pounds per hour pressure.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Accidents during aerial gunnery passes at tow-targets, January 1944 - February 1945. (Supplemental Analysis 49). Off. Pub. Bd., Report, PB 11759. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Collision with tow-targets, cables, tow planes, and the inadvertent shooting of aircraft and personnel during passes at tow targets resulted in 214 major accidents during this 14-month period. An analysis showed that fighters were involved in two-thirds of the accidents. Statistical data on the types of collisions and recommended preventive measures are given.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Accidents involving weather, navigation, and related factors. January-July 1944. (Supplemental Analysis 18). Off. Pub. Bd., Report, PB 11790. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Analysis of 397 wrecks and fatal accidents which occurred during extended flights showed several factors, many of them closely related, which recurred frequently. First of these was weather followed by poor navigation, improper clearance, control tower errors, failure of radio equipment and communications, inadequate flight preparations, lack of proficiency on instruments and wilful violations. Table 1 gives types of accidents by aircraft type; Table 2 aircraft damage by type of aircraft; Table 3, all accidents, fatal accidents and

injury classification by type of aircraft; Table 4 types of missions by type of aircraft; Table 5 time of accident occurrance by type of aircraft.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Accidents resulting from improper use of fuel systems. (Supplemental Analysis 33). Off. Pub. Bd., Report, PB 11775. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
503 accidents occurred in the AAF during 1943 and the first nine months of 1944 because of these fuel transfer difficulties: (1) Failure to change tanks; (2) transfer of tanks too late to prevent air locks, etc.; (3) failure to follow prescribed procedures in use of controls; and (4) carelessness in use of fuel selector valve. Various accidents of this type are tabulated and analysed.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Accidents resulting from misinterpretation of cockpit signals. (Supplemental Analysis 43). Off. Pub. Bd., Report, PB 11765. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
27 accidents occurred during the period June-December 1944 in which co-pilot and flight engineer misinterpretation of cockpit signals in twin-engine and four-engine tactical aircraft were contributing factors. Such accidents occurred for two basic reasons: (a) Crew members were expecting some signal and mistook an indefinite gesture by the pilot to be it; (b) the pilot's signal was ambiguous. Recommendation: a standard set of signals which would be the same for all aircraft.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. A-20 and DB-7 accidents. (Memorandum 8). Off. Pub. Bd., Report, PB 11700. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
A study of accidents involving the A-20 and DB-7 showing principal types and cause factors involved. A series of tables breaks down causes and shows number of failures due to each cause. Comparative figures for accident rates of the B-25 are included. Recommendations for precautionary measures are offered.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. A-26 accident survey, Dec. 18, 1944. (Supplemental Analysis 25). Off. Pub. Bd., Report, PB 11783. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Report is prepared to provide information which may serve as a guide to accident prevention. The A-26 had been involved in a total of 39 accidents, of which nearly half have involved landing gear difficulties; 9 accidents occurred in flight, 4 accidents occurred during take off; and 2 others occurred on the ground. Each accident is briefly described. Details concerning landing gear accidents are contained in appendix I. Tables of A-26 flying time vs. number of flying accidents; a table of accient types; and tables of distribution of accidents by plane model and series, and also of pilot experience level, all make up appendix II.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. A-26 fires in air. (Supplemental Analysis 40). Off. Pub. Bd., Report, PB 11768. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
A study of 6 A-26 accidents involving fire in the air in the period from November 1944 to February 1945. All the fires occurred on take-off and resulted in 6 aircraft completely wrecked and 4 fatalities. Investigation results and recommendations for correcting defects are given.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. AT-6 accident record, March 1945. (Supplemental Analysis 65). Off. Pub. Bd., Report, PB 11744. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
In March the AT-6 established its worst accident record in a year's operation, being involved in 196 accidents at a rate of 58 accidents per 100,000 flying hours. Pilot errors in landing causing ground loops, caused the greatest number of accidents, materiel failures was 2nd and maintenance errors, 3rd. Rated pilots rather than students were involved. Table of AT-6 accidents, their number and rate from April 1944 to March 1945, is included.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. AT-6 aircraft accidents. (Supplemental Analysis, 22 and Appendix I). Off. Pub. Bd., Report, PB 11786. 1944. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Principal accident types accounting for the high rate of AT-6 aircraft accidents appeared to be landing type and ground loops. Other accidents were caused by forced landings, collision with ground wires, and taxiing accidents. Appendix I dated 12 January 1945 gives an excerpt from a letter from Aircraft Section ATSC dated 22 December 1944 on items covered in Supplemental Analyses, No. 22. It gives changes in design approved for the AT-6 aircraft.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. B-25 accidents involving materiel failure. (Memorandum 6). Off. Pub. Bd., Report, PB 11702. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
A review of accidents involving materiel divided into nine groups such as failure of nose wheel, hydraulic system, etc. Under each group causes and frequency of failure are considered. A summary gives an overall review of the text.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. B-26 landing gear and tire failures, June 1944 - 10 January 1945. (Supplemental Analysis 42). Off. Pub. Bd., Report, PB 11766. 1945. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
An analysis of landing gear and tire failures in B-26 aircraft and the causes for such failures. Recommendations for correction are made.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. B-29 accidents. (Flying Safety Memorandum No. 4). Off. Pub. Bd., Report, PB 11704. 1944. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
This is an analysis of 25 B-29 accidents occurring between February 1943 and April 1944. There is presented a breakdown of contributing factors such as materiel failure, personnel error, fire and engine failure. A comparison of accident rate to flying time per month, and a tabulation of the 25 accidents and factors relative to each is given along with specific recommendations for prevention of such accidents in the future.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. B-29 electrical and landing gear electrical system as a contributing factor in accidents. (Memorandum 5). Off. Pub. Bd., Report, PB 11703. 1944. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Comments and recommendations for improvement of the systems mentioned and a description of ten accidents and their causes in relation to failure of the electrical set-up.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. C-47/53 accidents. Continental. Jan. 1, 1945 - April 25, 1945. (Supplemental Analysis 66). Off. Pub. Bd., Report, PB 11742. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Examination of flying time and accident records for January through March 1945 indicates that the 2 principal users of the C-47, the Air Transport Command and the 1 Troop Carrier Command, had almost the same accident rate. Personnel errors were primarily responsible for 38 accidents, weather and miscellaneous factors for 9, and failures of materiel for 4 accidents. Log of each type of error is included.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. C-64 groundloops. (Supplemental Analysis 29). Off. Pub. Bd., Report, PB 11779. 1944. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
During the six-month period ending October 31, 1944, the C-64 was involved in 78 accidents in the U.S. and overseas, of which nearly half (37) were ground loops. Inexperience in piloting this plane, together with difficult maneuverability on the ground and under gusty wind conditions, are the main accident factors.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Collisions between aircraft in formation. (Supplemental Analysis 28). Off. Pub. Bd., Report, PB 11780. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Formation flying collisions comprised slightly more than 1% of all accidents from January 1943 through October 1944, but accounted for 7% of total fatalities and 5% of all wrecked aircraft. Analysis is made of the contributing factors to formation collisions and recommendations for lessening this hazard are listed.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Deaths and injuries from revolving propellers. (Supplemental Analysis 36). Off. Pub. Bd., Report, PB 11772. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Almost every accident of this type was caused by gross negligence. 53 such accidents occurred in 1944 in the Continental U.S. AAF. In these accidents 34 people were killed, 17 received major injury, and 2 had minor injuries. Brief descriptions of these accidents are given.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Fighter aircraft accidents. (Flying Safety Memorandum No. 3). Off. Pub. Bd., Report, PB 11705. 1944. 30 p. Price: Microfilm-50¢ - Photostat-$2.00
During 1943 there were 3,627 fighter aircraft accidents, resulting in 605 fatalities, 1411 completely wrecked planes, and having a damage cost of $137 million dollars. This report gives breakdown figures for such accidents according to type of airplane, hours flown, accidents per month, and a summary of total comparisons. A more detailed account is given for the first two months of 1944. Under each plane type, consideration is given to contributing factors such as power plant failures, pilot error, materiel failures, and maintenance failure.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Heavy bomber accidents. (Flying Safety Memorandum No. 2). Off. Pub. Bd., Report, PB 11706. 1944. 26 p. Price: Microfilm-50¢ - Photostat-$2.00
There were more than 1000 heavy bomber accidents in 1943, killing 2000 men and completely wrecking 450 heavy bombers. This report gives breakdown for hours flown, number and rate of accidents for the B-17 and B-24, types of accidents, materiel failures, and factors involved in accidents.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Helicopter accidents. Dec. 30, 1944. (Supplemental Analysis 30). Off. Pub. Bd., Report, PB 11778. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Although there has only been 2,334 hours of flying time on helicopters since October 1943, there have been enough accidents to indicate some of the general safety problems of the helicopter. Materiel failures, mostly concerned with rotors, ranked first and personnel error or flying characteristics accounted for the remaining accidents. In each of the latter instances, failure to maintaine lift was associated with surface air conditions.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Maintenance as a factor in aircraft accidents. (Flying Safety Memorandum No. 1). Off. Pub. Bd., Report, PB 11707. 1944. 10 p. Price: Microfilm-50¢ - Photostat-$1 00
It was found that of 2,042 accidents, 924 were due to materiel failures. Power plant failure accounted for 75% of the materiel failures, and much of this was due to carelessness of maintenance personnel in leaving foreign matter in the engines, putting incorrect parts in engines, and general inefficient and careless procedures in repair work. A breakdown of accidents and causes is included.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Night accidents in bombers. (Supplemental Analysis 38). Off. Pub. Bd., Report, PB 11770. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
Night accident rates for bombers have consistently been nearly twice as high as rates for bomber accidents during the day. A detailed analysis of such night accidents during August, September and October, 1944, is given. Most accidents occurred in flight and in landing. Tabulations provide various statistical data for this analysis.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Night accidents in cargo aircraft. (Supplemental Analysis 39). Off. Pub. Bd., Report, PB 11769. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
Rates for night accidents in large cargo aircraft in 1944 were one and one-half times as high as day rates. Report contains a detailed study of such night accidents and their causes, for the period August to October 1944. Pilot error figured in almost half of these accidents.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Night accidents in fighter aircraft. (Supplemental Analysis 32). Off. Pub. Bd., Report, PB 11776. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
A report on the night accident rate of fighter planes in the United States. In the period, April to September 1944, fighter plane accident rates at night were twice as high as day rates. There is a detailed study of the causes of such accidents for the period August to October 1944. Principal cause was inexperience of pilots in night flying. Poor technique in landing accounted for almost half of the accidents.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Night accidents in trainer aircraft. (Supplemental Analysis 37). Off. Pub. Bd., Report, PB 11771. 1945. 8 p. Price: Microfilm-50¢ - Photostat-$1.00
Increased emphasis in night flying in trainers during 1944 has lowered night accident rates, but they are still consistently higher than rates for daytime accidents. A statistical study is made of accidents for a three-month period in 1944 which shows that three-quarters of the accidents were attributable primarily to pilot error. There are 7 tables.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Non-removal of pitot tube cover. (Supplemental Analysis 41-7). Off. Pub. Bd., Report, PB 11767. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
An analysis of 10 aircraft accidents occurring in the period June - December 1944 in which a principal contributing factor was failure to remove the pitot tube cover prior to take-off.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Personnel errors in B-29 aircraft accidents. (Supplemental Analysis 35). Off. Pub. Bd., Report, PB 11773. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Personnel error contributed to two-thirds of all continental B-29 aircraft accidents from July through November 1944. The accidents are tabulated by types and briefs are given for each accident involving personnel factors. Greatest difficulty was in landing operations.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Pilot errors in P-51 accidents. Continental, March, 1945. (Supplemental Analysis, 63). Off. Pub. Bd., Report, PB 11745. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Over 60% of all P-51 accidents since January 1943 involved pilot errors. More than half of the 24 March accidents occurred during landing. Major causes were in brake operation or inadvertent stalls, while landing. There is a brief account of the different causes of each of the accidents.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Power plant failures in B-29 accidents. (Memorandum 7). Off. Pub. Bd., Report, PB 11701. 1944. 16 p. Price: Microfilm-50¢ - Photostat-$2.00
This investigation considered six general types of factors involving power plant failures and discusses causes due to propeller systems, fuel systems, lubrication systems, engine structure and other equipment. Personnel errors and other factors are also reviewed. Fires were the chief cause of failure of engines, and methods for fire control are presented. Two tables give statistics concerning cause factors.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. P-40 landing accidents, Jan. 3, 1945. (Supplemental Analysis, 19, Appendix I). Off. Pub. Bd., Report, PB 11789. 1945. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
The high proportion of P-40 landing accidents is out of line

with its relatively good record for all types of accidents other than landing and also is not consistent with the ratio of P-40 flying time to the total of all fighter flying time. Outstanding factors in landing accidents are pilot errors, and material failure errors. Appendix 1 dated 3 January 1945, gives the review of the main report by ATSC with reference to materiel aspects of landing accidents. Corrective measures have been taken, and satisfactory improvement now depends on their application in the field.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. P-47 power plant failures. (Supplemental analysis 34). Off. Pub. Bd., Report, PB 11774. 1945. 7 p. Price: Microfilm-50¢ - Photostat-$1.00
An analysis of accidents involving power plant failure in the P-47 airplane for 1944. The P-47 had the highest rate of such failures of any tactical aircraft except the P-38 during this period. Detailed analysis is given of 70 different power plant failures in the period from September to December 1944. The most common failures were in the engine structure, fuel lines and tanks, and propeller governor.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Special accident report. (Supplemental Analysis 50-62, 67-86). Off. Pub. Bd., Reports, PB 11722-11741, PB 11746-11758. 1945. PB 11722, 2 p., PB 11723, 6 p., PB 11724, 3p., PB 11725, 5 p., PB 11726, 4 p., PB 11727, 4 p., PB 11728, 6 p., PB 11729, 6 p., PB 11730, 4 p., PB 11731, 3 p., PB 11732, 3 p., PB 11733, 5 p., PB 11739, 7 p., PB 11735, 12 p., PB 11736, 17 p., PB 11737, 4 p., PB 11738, 4 p., PB 11739, 4 p., PB 11740, 5 p., PB 11741, 2 p., PB 11746, 4 p., PB 11747, 4 p., PB 11748, 3 p., PB 11749, 8 p., PB 11750, 3 p., PB 11751, 3 p., PB 11752, 5 p., PB 11753, 6 p., PB 11754, 8 p., PB 11755, 20 p., PB 11756, 10 p., PB 11757, 10 p., PB 11758, 2 p. Total: 192 p. Price each (excepting PB 11736 and 11755): Microfilm-50¢ - Photostat-$1.00; PB 11736 and 11755: Microfilm-50¢ - Photostat-$2.00. Total price: Microfilm-$2.00 - Photostat-$13.00
These reports cover aircraft accidents of all types. Investigations of errors due to crew members, equipment failure, supervisory errors, maintenance errors, and structural defects are all taken into consideration. Causes and remedies are suggested, and accident trends are listed. Content is very similar to the "Analysis" series published by the same office.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Special accident report. (Analysis 100-113). Off. Pub. Bd., Reports, PB 11708 - PB 11721. 1945-1946. 66 p. Price each: Microfilm-50¢ - Photostat-$1.00. Total price: Microfilm-$1.00 - Photostat-$5.00
This is a group of reports published to aid accident prevention. Each report gives information as to the causes of aircraft accidents, the number of each type, and contributing factors. The scope covered is wide and recommendations for prevention are based on the findings of accident investigations. Such cause factors as personnel errors, equipment failure, and carelessness are arranged in breakdown tables, and accident trends are illustrated.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Spin accidents in the P-38. (Supplemental Analysis 27). Off. Pub. Bd., Report, PB 11781. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
An analysis of the causes of this type of accident during a three-month period of 1944. The L-series of the P-38 had 77% of the spin accidents, while the pilots, as a group, were inexperienced in this model aircraft.

U. S. ARMY AIR FORCES. OFFICE OF FLYING SAFETY. Taking off with landing gear switch in "up" position. (Supplemental Analysis 31). Off. Pub. Bd., Report, PB 11777. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
77 accidents were caused by pilots taking off with the landing gear switch in the "up" position during the period from July to November 1944. Such accidents generally result in major damage to the aircraft. Analysis is made of the reasons for making this error and recommendations for reducing its occurrence are proposed.

VALENTINE, C. I. Conference at NACA AERL Cleveland regarding heated air propeller deicing research. (Army Air Forces. Engineering Division, TSEPL6-581-206-4). Off. Pub. Bd., Report, PB 7963. 1945. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
The purpose of this conference was to plan a constructive research investigation for the NACA AERL Icing Tunnel related to propeller deicing by use of heated gases. It was contemplated that three icing conditions would be investigated at one tunnel speed and four values of V/ND. It was tentatively planned to try two mass flow rates of heated air through the blades at a given temperature and then make runs at two other temperatures at one of the selected mass flow rates.

WASSERMAN, LEE S. Flutter possibilities in high-performance airplanes with wing guns and ammunition boxes. (Army Air Forces. Experimental Engineering Section, EXP-M-51/VF 18). Off. Pub. Bd., Report, PB 6460. 1941. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Installation of wing guns and ammunition boxes, requiring large skin cut-outs, may result in low wing torsional rigidities and torsional frequencies in high-performance airplanes so that dangerous flutter oscillations may occur well below the limit of diving speeds of these airplanes. Suitable methods to increase wing torsional rigidities and torsional frequencies might include local structural reinforcements around the cutouts, carrying the shear across the cutouts and by increasing the gage of the metal covering. It is recommended that contractors be required to investigate the possibility of flutter in airplanes so equipped. The methods of Theodorsen or Kassner-Pingado may be used with calculated parameters to determine the wing torsional frequency required to give a calculated bending-torsion flutter speed 25% higher than the limited diving speed of the airplane.

WINSTON, C. B. Radio noise caused by aircraft engine ignition systems. (Army Air Forces. Engineering Division. ENG-54-656-477M). Off. Pub. Bd., Report, PB 10167. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
The causes and remedies of radio noise from the aircraft engine ignition systems are discussed in detail.

WINSTON, C. B. Test of bonding clamps submitted by the Automotive Rubber Company. (Army Air Forces. EXP-M-54-656-450). Off. Pub. Bd., Report, PB 10155. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
These clamps were tested to determine their suitability for use on aircraft. They were similar to the standard no. 755 type of bonding clamp, except that approximately 2/3 of the area of the clamp was coated with a synthetic rubber coating for cushioning. The remaing 1/3 of the clamp was left bare for the electrical bonding. It was concluded that these clamps met the requirements for bonding, but that the method of cushioning was not considered satisfactory. It was recommended that the manufacturer be invited to submit new samples.

WINSTON, C. B. Test of bonding clamps submitted by the aircraft Industry. (Army Air Corps. Experimental Engineering Section. EXP-M-54-656-450A). Off. Pub. Bd., Report, PB 10156. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of tests on bonding clamps submitted by four manufacturers to determine whether the types of clamps now being used by the various manufacturers meet the specification tests for electrical bonding and also retain a sufficiently low resistance under normal conditions. A description of the tests, and a table showing results are given. It was recommended that in the future all aircraft manufacturers use cushioned clamps of the type covered in Air Forces Specification 28550.

WOLFSOHN, R. S. Induction system icing. (AAF ATSC Engineering Division Technical Note TN-87-1). Off. Pub. Bd., Report, PB 8139. 1944. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This report outlines the two major types of induction system ice as applied to carburetors of airplanes, and explains under what circumstances they are likely to occur as well as the methods of preventing or eliminating either one. It is recommended that all future airplane designs

for use by the Army Air Forces be equipped with facilities for obtaining sufficient hot air to prevent induction system ice and to remove it when it has occurred.

WOOD, J. B. Static tests - aileron and control system - AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 6). Off. Pub. Bd., Report, PB 10186. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The tests were made in the up-load condition and as recorded met all requirements for structural strength.

WOOD, J. B. Static tests - AT-10 airplane - summary. (Army Air Forces. Engineering Division, ENG-M-51-TR321-27, Add. 12). Off. Pub. Bd., Report, PB 10192. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a summary report of structural tests conducted on this plane. It lists the structural failures below 100 percent ultimate load and methods of remedying them.

WOOD, J. B. Static tests-fuselage-AT-10 airplane. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 2). Off. Pub. Bd., Report, PB 10182. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests proved the fuselage supported 125% ultimate load without failure.

WOOD, J. B. Static test-Wings-AT-10 airplane - Positive low angle of attack-Gust condition. (Army Air Forces. Engineering Division, ENG-M-51TR321-27, Add. 8). Off. Pub. Bd., Report, PB 10188. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Description of the test and results are included in this report as well as the load factors involved.

WRTH, WELDON. Letter from Lockheed Aircraft Corp., dated March 4, 1941, on the subject of hopper type oil tank. (Army Air Forces. Experimental Engineering Section. EXP-M-57-523-109). Off. Pub. Bd., Report, PB 8209. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report consists of comments on the Lockheed Aircraft Corp. letter noting the reduction in hopper length of the oil tank. Difficulty had been experienced in maintaining oil pressure in the P-38 airplanes in both climb and level flight. Numerous changes were made, including the shortening of the hopper by one-half inch, after which satisfactory oil pressure was supposed to have ben provided. From the available information it becomes apparent that the other changes corrected the loss of oil pressure rather than the reduction of the hopper length. It is recommended that this modification should not be approved without further investigation and that if it is necessary to reduce the restrictions between the main part of the tank and the outlet this should be accomplished by increasing the flow area rather than decreasing the length of the vertically disposed communication.

WRTH, WELDON. Pressure relief valves to limit scavenging oil pressure. (Army Air Forces. Experimental Engineering Section. EXP-M-57-523-103). Off. Pub. Bd., Report, PB 8206. 1941. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Memorandum report to confirm a conference of Mr. Crusan of United Aircraft Products and Mr. Worth of the Materiel Division for discussion of comments of the Division personnel on valves submitted in Drawing no. U-4400 by United Aircrafts Products. Division representative stated that the subject valve might be operable, but had some adverse conditions which might be sufficient to cause unsatisfactory service, and suggested two types of modification in the design of pressure relief valve which would tend to overcome the objections. The first suggestion is a purely pressure relief valve with a 75 pound poppet valve relieving the scavenging pressure directly to the tank, and the second type of valve eliminates the back pressure of 75 pounds on the engine scavenging pump at the time of starting. It incorporates a by-pass line from the scavenging line direct to the tank, but this by-pass line is closed by a thermostatic valve of the D-8 type, incorporating a normal pressure relief.

WRIGHT, JAMES L. Suppression of ignition radio interference. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-477M). Off. Pub. Bd., Report, PB 10166. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Tests were made to determine the efficiency of radio frequency shielding of ignition assemblies, the amount of interference radiated from the assemblies, and the steps necessary to minimize or eliminate interference. New design specifications are recommended for use in aircraft.

WUNDERLICH, O. A. Bell Model 51 helicopter specification. (Army Air Forces. Engineering Division. TSEPE-420-570). Off. Pub. Bd., Report, PB 10008. 1946. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
A revision in the specifications of the Model 51 helicopter.

WUNDERLICH, O. A. Bell specification, IB-12 helicopter. (Army Air Forces. Engineering Division. TSEPE-420-560B). Off. Pub. Bd., Report, PB 10009. 1946. 6 p. Price: Microfilm-50¢ - Photostat-$1.00
A revision in the specifications of the IB-12 helicopter.

WUNDERLICH, O. A. C-82A airplane model specification. (Army Air Forces. Engineering Division, TSEPE-416-569). Off. Pub. Bd., Report, PB 10281. 1946. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a revised list of specifications for equipment and accessories to be used in subject airplane. The breakdown indicates quantity of each item to be installed, the name of item and its weight, and the changes to be made in the present specifications.

YOUNG, R. B. Conference with Lawrence Engineering & Research Corporation. (Army Air Forces. Experimental Engineering Section, EXP-M-54-656-538A). Off. Pub. Bd., Report, PB 10237. 1942. 2 p. Price: Microfilm-50¢-Photostat-$1.00
This is a report of a conference with officials of the Lawrence Engineering Company in regard to accessory power plants of the Army Air Forces Type D-2, Lawrence Model 30-A which this Company was producing on contract. Topics discussed included the arrangement of the generator control panel, provision for remote control switches, treatment of the engines for storage, water-proof maintenance kits, and a change from aluminum to magnesium parts on the accessory power plants.

YOUNG, R. B. Conference with Ruckstell-Burkhardt Engineering Company. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-538). Off. Pub. Bd., Report, PB 10233. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Report of a conference with officials of the Ruckstell-Burkhardt Company regarding accessory power plants of the Army Air Forces, Type D-2, Ruckstell-Burkhardt Model V-32X, which this company was producing on contract. Difficulties with the generator Type P-2 and voltage regulators were discussed and a number of recommendations were made to improve these and other parts of the assembly.

YOUNG, ROSS B. Inspection of installation of type HRU-28 power plant in B-26 B airplane. (Army Air Forces. Experimental Engineering Section, EXP-M-54-656-494). Off. Pub. Bd., Report, PB 10265. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The Glenn L. Martin Company of Baltimore, Md. made an installation of the type HRU-28 power plant in the gun turret compartment in the B-26 B airplane as an emergency source of electrical energy. On flight tests the power plant carried 45 amperes at 30 volts at 13,000 feet. The load fell off in proportion to altitude, and at 17,000 feet, the load was 10 amperes at 30 volts. It was concluded that the location of the power plant is satisfactory as far as can be determined; the installation permits exceptional operation of the power plant in flight, the exposed exhaust pipe is a hazard to both personnel and equipment.

ZIMS, W. H. and STULEN, F. L. Accident of U. S. Coast Guard VHOS-1 helicopter. (Bureau No. 46447). (Army Air Forces. Engineering Division. TSEFL6-350-3). Off. Pub. Bd., Report, PB 10115. 1944. 9 p. Price: Microfilm -50¢ - Photostat-$1.00
The report of an investigation of the crash of a helicopter near Rockaway Airport, N. Y., and statements as to how it happened and the probable reason for the crash. Two photographs illustrate the damaged aircraft.

ZIRKIND, R. Simplified analysis of current turbo-power plants. (Navy Department. Bureau of Aeronautics. Aviation Design Research Section Report M-39). Off. Pub. Bd., Report, PB 8176. 1945. 40 p. Price: Microfilm-50¢ - Photostat-$3.00
The scientific basis of the analysis presented in this report will be found in ADR Report M-37 (PB 8175) entitled "Estimation of the performance of aero-thermo-dynamic power plants". This report is intended for direct engineering analysis of current power plants operating on the Simple Joule Cycle. Charts useful for this purpose have been carried over from the basic report. Contains four sections: Symbols; essential theory; charts and their uses; and bibliography. The section on theory supplies sufficient background for application of the steps in the analysis. The section on charts gives detailed step-by-step instruction together with a numerical example. Illustrations and figures. See also PB 8175, by Parke and others.

Land transportation

United States

U. S. ARMY. ENGINEER CORPS. Hubbard-Field tests on hot mix asphaltic concrete and rock asphalts. Off. Pub. Bd., Report, PB 8187. 1944. 88 p. Price: Microfilm-$1.00 - Photostat-$6.00
This informative report presents the results of Hubbard-Field stability tests on hot-mix asphaltic concrete specimens molded with six widely varying types of coarse aggregate each used in twelve different closely controlled gradations. These results and the methods used for obtaining them are presented in Part I of the report. Supplementary tests on twelve rock asphalts obtained from several quarries in the U. S. are presented in Part II. Photographs, diagrams, charts, and graphs are included.

U. S. ARMY. ENGINEER CORPS. Report on service behavior tests at Barksdale Field, Shreveport, Louisiana. Off. Pub. Bd., Report, PB 8180. 1944. 132 p. Price: Microfilm-$1.50 - Photostat-$9.00
The Barksdale Field tests were conducted to determine the following for 5,000 coverages of 20,000- and 50,000-pound wheel loads on flexible pavements with a 3-inch asphaltic concrete wearing course: (1) thickness of pavement and base required to prevent detrimental shear deformation in the subgrade, (2) the effect of the quality of base materials on the total required thickness of pavement and base, (3) the quality of base materials required directly under the pavement, (4) the thickness of a soil cement base required to prevent detrimental shear deformation in the subgrade, and (5) the compaction required to prevent excessive consolidation of the base materials and subgrade under traffic. Information also was obtained on the behavior of bases with no surface treatment and of bases with the top 3 inches treated with sodium chloride and with calcium chloride. Photographs, tables, charts, and diagrams are included.

U. S. ARMY. ENGINEER CORPS. ENGINEER BOARD. Summary report on road expedients. (Report 825). Off. Pub. Bd., Report, PB 11179. 1944. 41 p. Price: Microfilm-50¢ - Photostat-$2.00
This report covers a summarization of the studies of road expedients by the Technical Staff of the Engineer Board as related to the passage of pneumatic tired vehicles through areas of unstable sand and low load bearing saturated soils. Appendices contain a list of reports and pertinent letters, photographs and fabrication data on recommended types of expedients; and photographs and fabrication data on types of expedients tested but not recommended.

U. S. WAR DEPARTMENT. CHIEF OF ORDNANCE. Carloading (double-deck) the ¼ ton, 4 x 4 truck (the "Jeep"). (Ordnance Packing Clinic Instructions 157). Off. Pub. Bd., Report, PB 11084. 1944. 20 p. Price: Microfilm-$1 - Photostat-$2.00
Instructions for loading assembled jeeps on railroad flat car or in wooden floor gondola cars as double deck loads. Illustrated with photographs and drawings. Prepared by Packaging Branch, Detroit.

U. S. WAR DEPARTMENT. CHIEF OF ORDNANCE. Truck, 5 ton, 4 x 4, prime mover, with/winch C.O.E., hard top, with/hip ring (F.W.D., model SU). Export packing procedure. Single unit pack (S.U.P.). (Ordnance Packing Clinic Instructions 158). Off. Pub. Bd., Report, PB 11085. 1944. 61 p. Price: Microfilm-$1.00 - Photostat-$5.00
Detailed instructions, illustrated with photographs and drawings, for disassembly, treatment, and packing of parts and crating of entire vehicle. Prepared by Packaging Branch, Engineering-Manufacturing Division, Detroit.

U. S. WAR DEPARTMENT. ENGINEER OFFICE, MOBILE DISTRICT. Accelerated traffic tests, Eglin Field, Florida. Off. Pub. Bd., Report, PB 8182. 1945. 97 p. Price: Microfilm-$1.00 - Photostat-$7.00
This report presents the results of accelerated traffic tests conducted by the Mobile District on a flexible pavement test track at Eglin Field, Florida. The purpose of the tests was: First, to study the effect of 15,000 -, 37,000-, and 50,000-lb. wheel loads on sand-clay bases having California Bearing Ratios (CBR) of 80, 60, and 40 when placed over a sand subgrade and surfaced with variable thickness of good quality bituminous wearing courses; and second, to check the validity of the tentative design curves in Chapter XX of the Engineering Manual for flexible pavements and bases placed on sand subgrades. Layout plan, tables, graphs and photographs are included. Published by U. S. Waterways Experiment Station, Vicksburg, Mississippi.

Marine transportation

German

MATTESON, W. J. Evaluation report of trailer, ponton and superstructure for ½ bay of German model "B" ponton bridge. (Army Engineer Corps. Engineer Board. Rep. 2170). Off. Pub. Bd., Report, PB 11464. 1945. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
This is an evaluation report of the above named parts of the German model "B" ponton bridge. The trailer, trailer load, ponton, superstructure, bridging equipment, and use of the equipment are discussed. The bridge equipment is comparable to U. S. Army 10-ton ponton bridge, 1938 model. Fifteen photographs are included.

MATTESON, W. J. German outboard motor; evaluation report. (Army Engineer Corps. Engineer Board. Rep. 2146). Off. Pub. Bd., Report, PB 11459. 1945. 5 p. Price: Microfilm - 50¢ - Photostat - $1.00
A description and evaluation of subject motor finds it lacking in many respects when compared to similar U.S. motors. It is a 30 hp. motor weighing 410 pounds. Photographs illustrate its physical characteristics.

Swiss

ACKERET, J. Escher Wyss verstellpropeller für schiffe. (Escher Wyss adjustable propeller for ships). (Enclosure to PB 7432, by A. H. Schilling, entitled: Escher Wyss, Zurich, Switzerland, Report 4). Off. Pub. Bd., Report, PB 7448. n.d. 15 p. Price: Microfilm-50¢ - Photostat-$1.00
This paper contains theoretical principles and practical applications of recent developments in ship propellers. Technical articles include the following: The constructive development of the adjustable propeller from the Kaplan-turbine; adjustable propellers and high pressure steam for ship propulsion; and, practical experiences with adjustable propellers. Charts, diagrams and photographs accompany the German text. For PB 7432, see p. 619.

HARFMLS, J. Verstellpropeller für schiffe. (Variable-pitch propeller for ships). (Reprint from "Werft-Reederei-Hafen" Vol. XXIII, annual, 1942). (Enclosure to PB 7432, by A. H. Schilling, entitled: Escher Wyss, Zürich, Switzerland, Report 4). Off. Pub. Bd., Report, PB 7439. 1942. 5 p. Price: Microfilm-50¢ - Photostat-$1.00
This article in German describes the Escher Wyss variable-pitch propeller which permits easy operation and reversion. The essential device is a hydraulic controlling system which operates through oil pressure within the hollow shaft of the propeller.

MEISTER, E. Der umbau des Genfersee-dampfbootes "Léman". (The conversion of the Lake of Geneva steam-boat "Léman"). (Reprint from "Schweizerische Bauzeitung" Vol. 122, No. 11, Sept. 11, 1943). (Enclosure to PB 7432, by A. H. Schilling, entitled: Escher Wyss, Zürich, Switzerland, Report 4). Off. Pub. Bd., Report, PB 7440. 1943. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This article in German describes the conversion of an old-style paddle steamer into a modern motor boat with diesel-engine propellers. The ship is propelled by two variable-pitch propellers controlled by an oil-pressure servomotor. Thus, turning of the boat or changing of its course is greatly facilitated.

ZEHLST, H. Escher Wyss Verstellpropeller für schiffe. (Reprint from "Escher Wyss Mitteilungen" annual, 1940). (Enclosure to PB 7432, by A. H. Schilling entitled: Escher Wyss, Zürich, Switzerland, Report 4). Off. Pub. Bd., Report, PB 7438. 1940. 4 p. Price: Microfilm-50¢ - Photostat-$1.00
This German reprint, entitled variable-pitch propeller for ships, describes a new type of variable-pitch propeller the most characteristic design of which replaces the mechanical controlling device with a hydraulic one. This design allows easy adjustment and even reversal of the propeller.

United States

DAWBARN, WARING L. Airborne lifeboat rough water tests. (Army Air Forces. Engineering Division. ENG-TSEAL-5E-670-8A). Off. Pub. Bd., Report, PB 11680. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This airborne lifeboat, refueled by means of the type A-6 aerial delivery cargo container, was found adequate for use.

ECK, CHARLES F. Elimination of audible noise in the engine room. (Army Air Forces. Engineering Division. TSEPE-674-11B). Off. Pub. Bd., Report, PB 10301. 1946. 13 p. Price: Microfilm-50¢ - Photostat-$1.00
Factual data of tests taken before and after installation of fiberglass insulation in the engine room of an 85' rescue boat proved that insufficient reduction in noise made it inadvisable to use this method of insulation. Instead, ear plugs for personnel were advocated.

LOCKE, F. W. S., JR. Notes on the selection of hull lines for a 25,000 lb. utility flying boat. (Navy Department. Bureau of Aeronautics. Aviation Design Research Section. Report R-42). Off. Pub. Bd., Report, PB 8160. 1945. 9 p. Price: Microfilm-50¢ - Photostat-$1.00
This report gives the main reasons behind the selection of various parameters for a set of hull lines for a 25,000 lb. utility boat which will be used partly for air-sea rescue work. The hull shape parameters include bow sections, forebody length and beam, step, afterbody, dead rise, bow spray, main spray, including forebody dead rise, afterbody angle and length and forebody chine flare. Prevention of slipping and porpoising are considered. Landing impact, directional stability and afterbody chine flare are discussed. Hull lines are drawn to produce the following characteristics: (1) Dry windshield when taxiing in waves at low speeds; (2) props, flaps and horizontal tail clear of spray in relatively smooth water; (3) freedom from skipping during full stall and rough water landings; (4) low impact forces when alighting in rough water. Includes unfaired body plans and references.

McADAMS, W.H. Dispersion of exhaust gases in sea water. (OSRD Report 1238). Off. Pub. Bd., Report, PB 8606. 1943. 196 p. Price: Microfilm-$2.00 - Photostat-$13.00
Final report under contract 168 ONSsr-122 with Massachusetts Institute of Technology. The object of this project was to conduct studies and experimental investigations in connection with the disposal of the exhaust gases from internal combustion engines aboard submerged submarines. The work was carried out mainly at M.I.T., the Charlestown Navy Yard and the South Boston Naval Drydock. The basis proposed for full-scale operation involved internal combustion engines to produce about 2700 indicated horse power and 188 pound mols per hour of hot raw exhaust gas consisting of 86.7 pound mols per hour of water vapor (1560 pounds of steam), 86.7 pound mols per hour of CO_2 (3800 pounds) and 15.3 pound mols per hour of oxygen and argon. On the dry basis the dehumidified exhaust gas would then contain 85% CO_2 by volume and 15% oxygen and argon. Primary considerations in the design of gas-disposal apparatus were (1) simplicity, ruggedness and reliability, (2) small space requirements, (3) small power consumption. The prohibitive size of the equipment required for completely dissolving the exhaust gases in sea water within the pressure hull had caused this method to be discarded. Therefore the problem became one of dispersing the gas into the sea in the form of bubbles sufficiently small to be completely absorbed while rising toward the surface. The minimum or critical depth was taken as 30 feet. Steps taken in the development of the recommended two-stage, large-scale, water-injection disperser (shown in Drawings 1 and 1A) are summarized in an abstract of the report. There are detailed reports of tower runs, shallow tank runs, porous metal-plate dispersers, effect of water vapor, Navy-yard runs, and appendices: A. Details of equipment; B. Data and results; C. Sample calculations; D. Location notebooks and photos; E. Tank runs; F. Navy Yard runs. Report contains indices to tables, photographs, figures and drawings, with which it is profusely illustrated.

McDONALD, J. W. Cancellation of expenditure order No. 674-25, Tanks, fuel, self-sealing for rescue boats. (Army Air Forces. Engineering Division. TSEPES-674-19). Off. Pub. Bd., Report, PB 10302. 1946. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
It was decided that certain aircraft tanks were unsuitable for use on marine rescue boats, due to the tanks' irregularity in shape.

SCHENCK, J. R. Life raft equipment. (Army Air Forces. Experimental Engineering Section, EXP-M-54-671-61A). Off. Pub. Bd., Report, PB 11652. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a report on a display of life raft equipment, submitted by the Materiel Center, at the Headquarters of the 40th Bombardment Squadron, Mitchel Field, New York, November 6, 1942.

SPINNEY, FRANKLIN C. Drift of rubber life rafts. (Army Air Forces. Engineering Division. ENG-TSEAL-5E-670-22). Off. Pub. Bd., Report, PB 11678. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Reports a visit to the Woods Hole Oceanographic Institution for the purpose of gathering information on the effects of wind, ocean currents and waves on rubber life rafts of various sizes at different loadings.

MISCELLANEOUS

GORMAN, ARTHUR E. Facilities required for rehabilitating water supply systems in enemy occupied countries of Europe. Off. Pub. Bd., Report, PB 4791. 1944. 82 p. Price: Microfilm-$1.00 - Photostat-$6.00
This report has been prepared by the Water Division of the War Production Board to provide a basis for estimating the types and qualities of related equipment and materials which may have to be programmed for procurement in 1944. Section II contains a comparison of this report with the British Young-Sinclair Water Supply Report as related to basic assumptions, procedures, and facilities required. Appendix I consists of criteria for pumps and prime movers,

distribution and transmission systems, water, purification, and construction facilities. Appendix II contains 25 tables, of which 20 cover summary of equipment and itemized cost estimates for each of 17 enemy occupied countries as well as for Germany. The other 5 tables cover summary of equipment and cost estimate of the British Young-Sinclair Water Supply Report.

German

BRITISH INTELLIGENCE OBJECTIVES SUB-COMMITTEE. B.I.O.S. Preliminary Report, List No. 65. Off. Pub. Bd., Report, PB 8110. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Reports in tabular form of inspection of German manufacturing plants, etc., in August-September 1945: A-G des Atenbergs für Bergrau und Zinkhuttenbetrieh (zinc sheet and wire); Harkort Biken Stahlwerke (metallurgy); Fried Haas (industrial dryers, also small household dryer for vegetables and fruits) Irmer & Elte (air compressors); Wagener Stahlwerke (wire); Geldemeister Machinefabrik (multiple spindle automatic screw machines); Kollinan Maschinenbau (milling machines); R. H. Luckenhaus (textile machinery); Barmag Maschinenfabrik (textile machinery); Robert Bosch (spark plugs and ceramic insulators); Vereinigte Deutsche Metallwerke (light alloy castings); Kurbi und Niggeloh (cameras, fuzes, etc.); P. Seeland, Commercial manager of Emil Busch of Ratenow (spectacle and binocular lenses); Hermann Fleiss & Co. (aluminum electrodes and welding); and Fredrick Goetze (oil seals).

BRITISH INTELLIGENCE OBJECTIVES SUB-COMMITTEE. B.I.O.S. Preliminary Reports, List No. 65. Off. Pub. Bd., Report, PB 8012. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
This report contains brief information obtained in inspection of the following firms, etc., in Germany, August-September 1945: Oelwerke Noury & van der Lande (germ oil production), Oelwerke Germania (oil refining and hardening for margarine, nickel formate catalyst), Reichs-Marineamt (damaged and looted), Edeleanu Gesellschaft (coal and petroleum by-products), Arbeitsgemeinschaft für Hydrierung Synthese und Schwelerein (completely destroyed), Wirtschaftliche forschungs G.m.b.H. WIFO (destroyed), Gerlanberg's Construction HQ (destroyed), Mineralol-Baugesellschaft G.m.b.H. (destroyed), F. Leybolds Nachfolger A.G. (instruments), C. Plath Nautischer Instrumente (navigators' instruments), Volkenrode (X-ray equipment), Otto Fuchs KG (shell fuses, non-ferrous castings), Krupps, Essen (electrodes and tank production), Rudolf Otto Meyer (air conditioning plants and pipes), C. Aug. Schmidt Sohne (evaporators, feed water heaters), Kleingelnberg, Sohne (engineers' tools), and Rheinische Werkzeug u. Machinenfabrik (engineers tools).

BRITISH INTELLIGENCE OBJECTIVES SUB-COMMITTEE. B.I.O.S. Preliminary Reports List No. 81. Off. Pub. Bd., Report, PB 8107. 1945. 10 p. Price: Microfilm-50¢ - Photostat-$1.00
Brief reports of inspection of German factories railroad facilities, etc., in September 1945, as follows: J. Modler (surface plates and squares); G. Boley (machine tools); Gebr. Blumler (vernier protractors); Heinrich Lanz, A.G. (selling and servicing agricultural machinery); Georg Karstens (dial indicator gauges); Ernst Grob (machine tools); August Reber (disbanded); F. Deckel (diesinking machines); Sudenische telephon-Apparate Kabel und Draht-Werke A.G. (electric cables); Pfaff & Schlander (main and hair springs); Kabel und Metalwerke Neumeyer A.G. (cables); Hugs Kern & Hermann Feustal (clock and gramophone main springs and pressings); Gebruder Junghaus (clock and watch springs), P. T. R., Heidelburg (research group from P.T.R. evacuated from Zeulenrode with some apparatus, electronic); Sigmund Scherdel (steel wire and springs for valves and engineering purposes); Moritz Pochlmann G.m.b.H. & Co. (spring wire); VDM Sub-Deutsche Kabel Werke (electric cables); and Guntner & Kleinmond (engineers' cutting tools). There are also brief reports on condition of railway yards, stations and equipment at Bamberg, Wursburg and Schweinfurt; also reports on interrogation of Dr. H. Buchhols of Heidelburg, regarding theoretical electronics, and of Dr. Berger of I. G. Farben, at Ludwighafen, on plastics for cables.

KRAUSEN, R. S. Field Information Agency Assessment Report on Auer Gesellschaft, Berlin, August 8, 1945. (Chemical Warfare Service. Intelligence Division Report 114). Off. Pub. Bd., Report, PB 9625. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
The Auer Gesellschaft made the filter elements and face pieces for the German Army mask, peoples mask, and collective protector filters. Technical personnel of the firm stated that a new impregnation process had been worked out for charcoal which constituted a marked improvement. They also stated that the filling of the filter was modelled after the American canister since tests have proved the latter superior.

MONRO, RANDOLPH. German anti-gas head casualty hood. (Chemical Warfare Service. Development Laboratory, Mass. Institute of Technology. F.M.T.R. MIT 32). Off. Pub. Bd., Report, PB 10396. 1944. 21 p. Price: Microfilm-50¢ - Photostat-$2.00
A German anti-gas head casualty hood was examined. The hood consisted of a bag of thin black rubber adapted to fit over a bandaged head. The front of the hood was provided with one oval window of sheet plastic, together with a canister mounting piece and an outlet valve and housing. The report recommends that consideration be given to the adoption in the U.S. Headwound Gas Mask of the simplified harness construction used in the German hood. Photographs are included.

WILLIAMS, D. L. German antigas eyeshields. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. (Captured Materiel Technical Report. F.M.T.R. MIT 34). Off. Pub. Bd., Report, PB 10410. 1944. 11 p. Price: Microfilm-50¢ - Photostat-$1.00
The German antigas eyeshields consist of four sections of cellulose acetate coated with a wetting agent on the inner side. The sections are joined by stitched bias tape and the periphery is faced with velveteen. Four pairs of shields are carried in a folding, cotton-cloth case. Two of the four pairs of shields in each case are tinted with an olive green pigment. Photographs are included.

Italian

GILMONT, PAUL and MONRO, RANDOLPH. Italian gas mask repair kit. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. Foreign Materiel Technical Report, F.M.T.R. MIT 26). Off. Pub. Bd., Report, PB 8033. 1944. 77 p. Price: Microfilm-$1.00 - Photostat-$6.00
The kit was contained in a wooden box 27" X 11" X 11" high, provided with hinged lid, and trays. It included many supplies, reconditioning dies and tools for repairing Italian gas masks. An index of parts contained in the kit and photographs are included.

MONRO, RANDOLPH. Italian fire resistant gas mask and neck protector. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. Foreign Materiel Technical Report, F.M.T.R. MIT 22). Off. Pub. Bd., Report, PB 10423. 1944. 50 p. Price: Microfilm-50¢ - Photostat-$4.00
The facepiece was of green asbestos cloth covered rubber. A green asbestos protector for the neck was fastened to the periphery of the facepiece by means of metal clasps. The assembly was for use with fireproof clothing for flame thrower operations. It is recommended that the need for such a fire resistant facepiece and neck protector be investigated. Photographs are appended.

Japanese

GILMONT, PAUL. Japanese civilian facepiece, hosetube, and carrier. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. Foreign Materiel Technical Report, F.M.T.R. MIT 23). Off. Pub. Bd., Report, PB 10424. 1944. 81 p. Price: Microfilm-$1.00 - Photostat-$8.00
This report describes the detailed examination and testing of the facepiece, hosetube, and carrier only of the Japanese civilian gas mask. The design of the outlet valve, the headharness design with reference to both the strap construction and the buckle arrangement and the stiffening bow between the eyepieces are recommended for study with the view of improving the U.S. masks. Appendices contain trans-

lations, photographs, comparison of the Japanese civilian and U.S. masks, and a visionscope graph.

GILMONT, PAUL. Japanese army service gas mask. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. Foreign Materiel Technical Report, F.M.T.R. MIT 15). Off. Pub. Bd., Report, PB 10419. 1944. 57 p. Price: Microfilm-$1.00 - Photostat-$4.00
The facepiece was of semi-molded stockinet covered rubber with a stitched, strapped and vulcanized chin seam. The harness was of sleeve-covered rubber ribbon and non-elastic webbing. The following features are recommended for further study with view to development of similar features in U.S. models: The nosecup, disc type outlet valve suspended from the circumference held against a rubber or metal seat, the molded rubber ridge between the eyepieces to hold the facepiece open for easier adjustment, and the headharness straps and buckling arrangement. Photographs are appended.

MATTESON, W. J. Comments on Japanese individual camouflage net. (Army Engineer Corps. Engineer Board Rep. 154-2). Off. Pub. Bd., Report, PB 7256. 1944. 1 p. Price: Microfilm-50¢ - Photostat-$1.00
The net consisted of a 2-inch square mesh of twisted cotton twine, garnished with small pieces of raffia type grass tied to the net on 6 inch centers. The overall size of the net was 60" x 60". It appeared to be vat dyed in 3 colors: dark green, dark brown and yellow. A slit was cut from the center of the net diagonally to one corner with 2 tie strings attached to the slit, so that the net might be draped over the shoulders, and worn similar to a poncho or cape.

MONRO, RANDOLPH. Japanese army mask with hood. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory. Foreign Materiel Technical Report, F.M.T.R. MIT 16). Off. Pub. Bd., Report, PB 10420. 1944. 20 p. Price: Microfilm-50¢ - Photostat-$2.00
The Japanese army hood mask, described in detail in this report, was probably used by decontamination details where maximum protection of the head and neck was needed, although it could be used by combat troops for protection against chemical agents. The use of aluminum for all metal parts of the facepiece indicate that there was an abundance of that metal, whereas the U.S. was feeling a critical shortage of aluminum. It is recommended that consideration be given to the need for a gas mask with an integral hood in the U.S. Army. Photographs are appended.

United States

BEVENBAUGH, V. J. Development of the type B-5 life preserver vest. (Army Air Forces. Engineering Division. ENG-TSEAL-5E-670-21). Off. Pub. Bd., Report, PB 11679. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Life preservers were fabricated incorporating a more comfortable vest, greater buoyancy, an improved harness arrangement, and a vest designed to keep the head of an unconscious wearer out of water.

BYER, HARRY E. Small field collective protectors M7R2 (electric drive) and M8R5. (gasoline-engine drive). Engineering tests. (Chemical Warfare Service. Edgewood Arsenal Technical Report, E.A.T.R. 367). Off. Pub. Bd., Report, PB 6326. 1937. 45 p. Price: Microfilm-50¢ - Photostat-$3.00
The object of project D4.1-7 was to design small field collective protectors for field use. The object of the work described in this report was to complete the stage of that development known as engineering tests. This consisted of the design, construction, and tests of samples suitable for service test and meeting the requirements of project specification. Two models were designed; M7R2, assembly M3 was electric drive, and M8R5 was gasoline-engine drive. They met the requirements as to size, ruggedness, protection, air purifiers, water exclusion, gasoline-engine assembly, and standard parts. They did not meet requirements on weight, power, or tubing. A new model is under design, incorporating changes indicated by the tests. Drawings and photographs.

JONES, PETER C. Trainer: Demonstrator, Radio range. (Army Air Forces. Engineering Division. TSEPE-668-110A). Off. Pub. Bd., Report, PB 10296. 1946. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
An expenditure report on the design of a training device for radio range instruction.

MECANLESS, W. H. Demonstration by the Engineer Board of the use of fluorescent, phosphorescent and radio - active materials. (Army Air Forces. Experimental Engineering Section. EXP-M-54-656-510). Off. Pub. Bd., Report, PB 10246. 1942. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report contains conclusions reached by the demonstration as to the best use of phosphorescent materials and blackout lamps during blackouts.

MANSON, F. C. Sea rescue equipment. (Army Air Forces. Experimental Engineering Section, EXP-M-54-671-46). Off. Pub. Bd., Report, PB 11653. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
This is a report on an Army-Navy conference held in Washington, D. C., March 24, 1942, to discuss the standardization of sea rescue equipment.

MONRO, RANDOLPH. Inspection forms for dust respirator, M2. (Mass. Institute of Technology. Chemical Warfare Service Development Laboratory M.I.T. M.R. 65). Off. Pub. Bd., Report, PB 7096. 1944. 17 p. Price: Microfilm-50¢ - Photostat-$2.00
Since faceblanks made in accordance with C. W. S. Drawing C5-46-28 differed widely, revisions in the drawing were necessary. The original blueprint and the revised plan are appended to this report. The faceblank of the Sun Rubber Company was accepted as standard since a large number of the molds are in existence and can easily be reproduced. Photographs are included.

PETAJA, A. E. Conference on fire extinguishers and fuel tank purging at Joint Aircraft Committee, Navy Corcoran Annex, Washington, D. C., between representatives of the U. S. Navy and the Army Air Forces. (Army Air Forces. Engineering Division, TSELA-3E-524-1293). Off. Pub. Bd., Report, PB 7300. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Subject conference was called for the purpose of finding and comparing the needs and requirements of the Army, Navy and the British relative to fire extinguishers in the power plant installation with reference to Zone 1 protection and internal and external fuel tank purging.

SHERER, R. C. Life preserver vests. (Army Air Forces. Experimental Engineering Section. EXP-M-54-671-78). Off. Pub. Bd., Report, PB 11649. 1942. Price: Microfilm-50¢ - Photostat-$1.00
This report covers tests of a rubber substitute life preserver vest, having a vinyl resin molded bladder, submitted by the Goodyear Tire and Rubber Company.

STEVENS, S.S., and others. Progress report on project II, December 2, 1941: I. The effects of noise on psychomotor efficiency; II. noise reduction in aircraft as related to communication, annoyance, and aural injury. (OSRD Report 274). Off. Pub. Bd., Report, PB 8334. 1941. 155 p. Price: Microfilm - $2.00 - Photostat - $11.00
Report on experiments made by the Psychological Laboratory, Harvard University designed to measure the effects on human beings of noises similar to those encountered in aircraft. The first part of the report deals with the effect of acoustic stresses encountered in many military occupations on human performance, and describes tests showing detrimental effects of noise, tests showing ambiguous results, and tests in which noise had no effect. Part II is related directly to aircraft noises and acoustic treatment of such noises. The effect of noise on intelligibility of speech communication, measures of annoyance, and hearing loss are the three topics developed in this section of the report. Diagrams.

PACKING AND PACKAGING

EHRICH, F. F. Aluminum foil as method II barrier for engine packs. (Army Air Forces. Engineering Division, ESE4-98). Off. Pub. Bd., Report, PB 11865. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Test to determine moisture-vapor transmission rate of two styles of aluminum foil engine canopies. One is a drum-type semi-rigid laminated aluminum foil one-strip engine canopy sealed with asphaltic materials and assembled with bolts. The second is a square type, semi-rigid aluminum foil, reusable engine canopy. All seams are sealed with a cork composition gasket and the two component parts are bolted together. In testing, 16 ounces of weighed silica gel in bags was placed in each canopy which was subjected to temperatures from 70° to 130°F at 100% relative humidity. Laminated foil appears to be more suitable from the point of view of mechanical sturdiness and susceptibility to pin-holing. This model showed only 19.0 increase in weight of silica gel while the other showed a moisture increase of 39.6. The use of aluminum foil canopies shows promise as engine packs and should be studied further. Suitable gasketing materials should also be investigated.

EHRICH, F. F. Fuel pump preservation. (Army Air Forces. Engineering Division ESE 4-124). Off. Pub. Bd., Report, PB 11541. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
Test to determine a suitable method for corrosion proofing the Thompson TFD-100 aircraft fuel pump. One fuel pump was completely filled with corrosion preventive compound conforming to Specification AN-VV-C-576b, Type II. Dehydrator plugs were inserted into inlet and outlet ports. The projecting gear drive end was dipped in strippable protective compound Specification AN-C-117a. The pump was wrapped in Grade A paper and placed in the manufacturers carton which was overwrapped with Kraft paper. Fuel pump No. 2 was filled with the same compound. Inlet and outlet ports were sealed with plastic screw caps. The pump was wrapped in Grade A paper, and placed in a carton-barrier carton setup. The barrier material conformed to Specification AN-B-20. The outer carton was overwrapped with Kraft paper. Both were exposed to the temperature-humidity tropical cycle for 20 days. At the completion, pump No. 1 revealed no internal corrosion and no external except for the definite corrosion of a safety wire assembly. Pump No. 2 showed no internal or external corrosion. Second method-No. 2-is recommended.

FARMEN, DONALD R. Ex-crepe and A-50 foil as wrapping materials. (Army Air Forces. Engineering Division. ENG-59-680-23-33). Off. Pub. Bd., Report, PB 7870. 1943. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
These two wrapping materials were tested for their value in shipping sensitized materials to tropical areas. The test indicates that Ex-Crepe Triplex is an excellent material for wrapping photographic materials that are to be subjected to very high humidity or even immersion in water. It is also believed that A-50 Lead Foil would be suitable for the same purpose provided sufficient care were taken to assure proper sealing of the joint.

FARMEN, DONALD R. "Scotch-Wrap" as a moisture-vapor - proof wrapping material for sensitized photographic materials. (Army Air Forces. Engineering Division. ENG-59-680-56-12). Off. Pub. Bd., Report, PB 7893. 1944. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
"Scotch-Wrap" was not found to be a suitable export wrapping material for sensitized photographic goods.

HARDY, WALTER L. Use of open crates in export shipment. (Army Air Forces. Experimental Engineering Section. EXP-M-57-518-110). Off. Pub. Bd., Report, PB 8129. 1942. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
Open crates in export shipment should be used only after consideration of the following points: (1) Nature and value of the article, (2) unloading facilities at the port of discharge, (3) inland transportation system in the country of destination, (4) climatic conditions enroute and at the country of destination, (5) amount and nature of trans-shipping that may be required enroute to the final port of discharge, and (6) probable pilferage, owing either to nature of goods or the country of destination.

KADDERLY, H. W. Test of container, overwater, message drop, project AC-27. (Army Air Forces. Engineering Division. TSEAL-5F-672-3-147). Off. Pub. Bd., Report, PB 11675. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
The subject container made by the Dayton Manufacturing Company did not withstand immersion in fresh and salt water.

LARSON, FRANCIS R. Investigation on packaging and tropicalization in the Panama Canal zone. (Army Air Forces. Engineering Division. TSESE-4-82). Off. Pub. Bd., Report, PB 11261. 1945. 49 p. Price: Microfilm-50¢ - Photostat-$4.00
Survey of conditions of packaging under tropical conditions in the Canal Zone showed satisfactory packaging except in the case of greases, dopes, paints and chemicals which had unpainted cans which rusted and cardboard boxes which disintegrated in storage. Aircraft engine envelopes were often ruptured in nailing on lid. There is serious need for a Technical Order on storage practice, which is not uniform. All known fungus susceptible materials should be eliminated. Electrical equipment needs tropic proofing, instructions for which are given in appendix 5. A list of tropical tests stations in Panama is also appended.

OLEVITCH, ALBERT. Use of asphaltic compounds. (Army Air Forces. Container Branch Laboratory. TSESE-4-64). Off. Pub. Bd., Report, PB 11877. 1945. 3 p. Price: Microfilm-50¢ - Photostat-$1.00
"Protek coat", made by Davison Chemical Company, was investigated to determine whether asphaltic compounds are suitable as waterproofing agents in place of dipping waxes for use in method IA packages.

TURNDAHL, H. T. Crating of JB-2 power plant. (Army Air Forces. Engineering Division. ESE4-111). Off. Pub. Bd., Report, PB 11854. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report presents data on the development of a suitable packing for the JB-2 engine, including results of dropping tests.

TURNDAHL, H. T. Development of a container for a wooden propeller. (Army Air Forces. Engineering Division. ESE 4-116). Off. Pub. Bd., Report, PB 11580. 1945. 2 p. Price: Microfilm-50¢ - Photostat-$1.00
This report describes the design and development of a pack for a wooden propeller. This container was made of plywood and the propeller is held firmly in place by a bolt through the hub and securely fastened to the bottom of the box. The blades are firmly braced at the center by V-blocks and cushioning material and the tips are blocked by a piece of plywood over layers of hair-latex cushioning material. The results of the drop test indicate that the pack is satisfactory.

TURNDAHL, H. T. Preservation and packaging of hydraulic accumulators (Army Air Forces. Engineering Division. EST 4-128). Off. Pub. Bd., Report, PB 11498. 1945. 2 p. Price: Microfilm - 50¢ - Photostat - $1.00
Two accumulators were packaged, one by method II in a carton-barrier material; the other by Method I, using an accumulator which had been painted on the outside and the inside flushed with oil preservatives and a dehydrator plug inserted in the inlet. Corrosion tests indicated that hydraulic accumulators shipped in a method I pack compares favorably with method II pack and takes less time and fewer materials.

U. S. WAR DEPARTMENT. CHIEF OF ORDNANCE. Trailer, 1 ton 2 wheel cargo, with Onan PE95 generator equipment. Export packing procedure. Single unit pack - (S.U.P.). (Ordnance Packing Clinic Instructions 160). Off. Pub. Bd., Report, PB 11086. 1944. 20 p. Price: Microfilm-50¢ - Photostat-$2.00
Detailed packing procedure for power unit (including moisture-vapor-proofing) and for trailer and parts, illustrated photographs and drawings. Prepared by Packaging Branch, Engineering-Manufacturing Division, Detroit.

U. S. GOVERNMENT PRINTING OFFICE : 1946